Industrial FINISHING

PAASCHE TYPE CUB HIGH PRODUCTION AIRBRUSH IS THE GUN YOU NEED FOR WARTIME FINISHING!

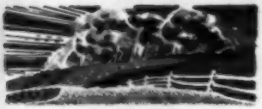
Here is the gun that can speed your toughest finishing assignment. It's precision made — built to stay on the job and cut maintenance costs. Working parts fully enclosed in machined brass body and protected against damage. Its *strong*, yet simplified, "design for action" gives light weight — ends fatigue. "Saran" moulded handle provides perfect grip. Fluid inlet swivels for use with gravity, syphon or pressure feed. Multiple heads are furnished for all finishing materials.

Send today for NEW, free, 8-page Booklet, FM9-42 Get the Facts and You'll Get this Paasche Gun!

Paasche Airbrush Co.

1917 DIVERSEY PARKWAY
CHICAGO, ILLINOIS

HOW MANY CYCLES LIKE THIS WILL YOUR PLYWOOD FINISH STAND?



16 HOURS OF SUN AND RAIN

. . . . in a twin arc weatherometer with robot-timer control. The 16 hour exposure is divided into alternate periods of 3 hours of destructive short ray light, with surface temperature of 150°F., and 1 hour of drenching water spray.

Then the test section panels are immediately subjected to . . .

3 HOURS OF PARCHING HEAT

. . . . at 140°F. in a dry heat oven to exhaust moisture absorbed during last stage of weatherometer cycle. Finish undergoes shrinkage as a result. The next step is . . .

3 HOURS OF TROPICAL HUMIDITY

. . . . in a tightly sealed glass chamber where the humidity is constantly maintained at 100% at a temperature of 100°F. After 3 hours the warm moist panels are plunged into a refrigerator box for . . .

2 HOURS AT −35° F.

. . . . sub-zero temperature is maintained in a specially insulated refrigerated chamber, automatically controlled to insure consistent result.

THE COMPLETE 24 HOUR CYCLE IS REPEATED UNTIL FINISH FAILURE CAN BE OBSERVED.

Now, with plywood taking an important part in aircraft production, new and improved methods of finishing this material can best be evaluated quickly, by controlled accelerated weathering.

Here at Roxalin, our Physical Testing Department has assembled, we are told, one of the country's outstanding laboratories for determining the comparative durability of paint films under accelerated conditions.

The [illegible] in constant use by our laboratories in their work developing plywood finishes which satisfy all [illegible] requirements, and at the same time solve the [illegible] problems peculiar to plywood.

The results of this laboratory work are constantly double-checked by outdoor exposure tests conducted in Florida and other strategic parts of the country.

The cycle described herewith is supplemented by other tests for abrasion resistance, vibration fatigue, chemical and salt spray resistance.

Exhibits and complete factual data gained in our study of the plywood finishing problem are available for your observation. Write us today, or better still accept our invitation to visit our Physical Testing Department.

ROXALIN 3 Flexible FINISHES

INCORPORATED • • • ELIZABETH, N. J.

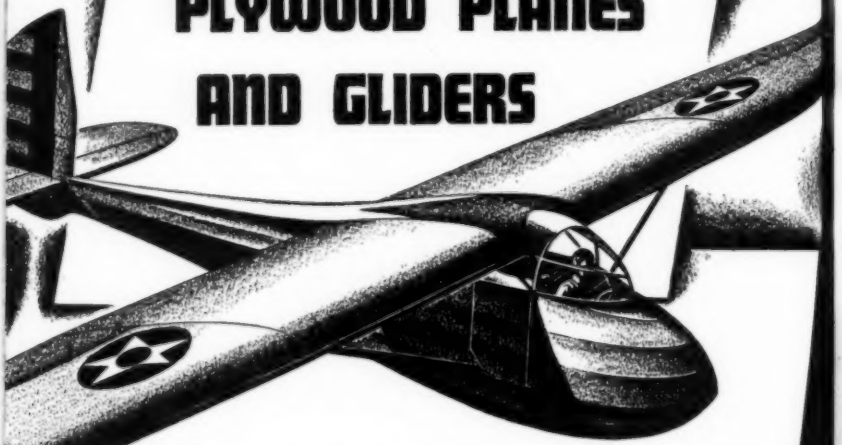
Watch Roxalin in Aviation

GKS
Baking Ovens
Manufactured in a size for every production requirement—from the small cabinet type to the large truck size. Electric, gas, oil or steam heated. Shipped completely assembled with necessary controls and safety equipment.
For complete information, write, wire or phone today.
GEORGE KOCH SONS, INC. Evansville, Indiana

ZAPON FINISH

FOR

PLYWOOD PLANES AND GLIDERS



ZAPON has added to its long list of war finishes a development in coatings for plywood planes and gliders that is of distinct advantage to wood plane makers. It has passed the rigid requirements laid down for such finish. This development is both a finish and a production procedure.

Outstanding features include:

- The wood is impregnated and sealed to provide highest moisture resistance. Zapon sealer SX-35 exceeds specification requirements in this respect.
- The finish is designed to add a minimum of excess weight to planes.
- The finish fits the high-speed production schedules consistent with the needs of the job.

- The new finishing system is used in the manufacture of planes and gliders for the Army.

We have worked out application schedules and will be pleased to discuss them and other aspects of this finish with you. Send for Zapon schedule ZP-1.

ZAPON

ZAPON DIVISION · ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. *Western Sales:* North Chicago, Ill.

INDUSTRIAL FINISHES

EIGHTEENTH YEAR OF PUBLICATION

Industrial FINISHING

Reg. U. S. Pat. Office

Published Monthly in the Interest of Modern Production Finishing

Vol. XVIII, No. 10 AUGUST, 1942 $2.00 a Year

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Practical Publications, Inc., 1142 North Meridian Street, Indianapolis, Ind.

Eastern Representative: C. A. Larson, 254 West 31st Street, New York City; Phone Penna. 6-9049

Letters from Readers...

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Likes Chester's Article

We refer you to the July 1942 issue of INDUSTRIAL FINISHING Magazine, in which appeared an article by H. W. Chester, covering the production line finishing of typewriter desks. This subject interested us very much, and if at all possible we would like to get in touch with the author, H. W. Chester, for further information. With this thought in mind we would appreciate your favoring us with the name of the plant in which this production line change was made.—Minnesota Mining & Mfg. Co.

Information supplied.—ED.

Infra-Red Drying

We have read with a great deal of interest the article appearing on pages 15 and 16 of July 1942 issue of INDUSTRIAL FINISHING, having reference to Infra-Red Paint-Drying. Will you be so kind as to furnish us with the names of the manufacturers prepared to supply equipment such as this?—H. Mfg. Co. (Woodwork of Merit).

Information supplied.—ED.

Wood Casket Finish

We solicit your recommendations for a finishing product applicable to wood surfaces. From our experiments thus far conducted, the material must have excellent adhesive qualities, substantially fill and cover cracks and defects, not be affected by grain raise, usable in a spray gun, and be painted with lacquers. Won't you please advise us if there is any known product that will meet these qualifications?—M. Casket Co.

Used Thinner for Sale

Your name has been referred to us as being able to supply us with the names and addresses of companies buying thinner that has been used and has different colors of lacquer in it. We have approximately 50 gallons of this on hand and we would like to have it cleaned or sell it as is. We would appreciate it very much if you would send us two or three names of companies buying this material.—S.B.&B. (Brushes; Brooms).

Supplies Toy Finish

In the July issue of your magazine, page 75, we notice that the "G. A. Co." is interested in a material that can be used on toys—something which does not conflict with limitation order L-81. Since we manufacture a material of this type we would be very much interested in having the full name and address of the company who made this inquiry.—Rudd Lacquer Corp.

We are familiar with L-81 Limitation Order for toys and games which limits the finish. As a result of this, we have developed what we call a Type C finish which does not contain

VINDOLAC

Still Available to Our Regular Trade, Also

DU BAR BLEACH **WATEROIL STAINS**

FILLERS . . . No. 1900 CLEANUP POLISH

and numerous other items

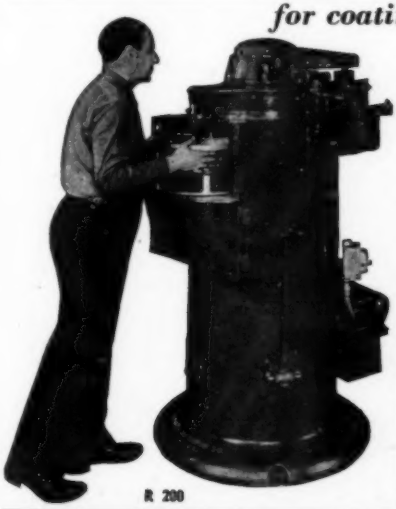
Although most of our facilities are now directed toward manufacturing Government products, we are still making every effort to supply regular customer requirements.

V. J. DOLAN & COMPANY, INC.

Mfrs. of "Unquestionable Quality" Industrial Finishes

1830 N. LARAMIE AVENUE CHICAGO, ILLINOIS

for coating **WAR PRODUCTS**



R 200

500 Large Cartridge Clips Coated Per Minute
1000 1" Buckles Coated Per Minute with R-200

"SPEEDIP" Whirl Enameler and Coating Machine

A combination dipping-whirling machine for completely coating large quantities of small parts with lacquer, enamel, paint, oil, wax, etc. • All operations are within the machine. Parts are dipped into coating material, raised and whirled. Time—as little as 30 seconds. Speeds up production—cuts finishing costs—saves up to 90% of coating materials. • Write for further details or send samples to be coated.

RONCI MACHINE CO.

45 River Ave., Providence, R. I.

PASSED AND APPROVED!

Our Rust Inhibiting Primer No. 23696 and Lustreless Olive Drab No. 23680

Have been approved for U. S. Government specification finishes after undergoing rigid and exhaustive tests.

Can be brushed or sprayed, air dried or baked and will fit into any production schedule.

Manufacturers of equipment, with specifications that require these protective coatings, are invited to write us for liberal working samples, prices and delivery dates.

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THINNERS
ENAMELS
METALIZED FINISHES
SYNTHETICS

UNITED LACQUER MFG. CORP.
General Offices and Factory: Linden, New Jersey
New England Mfg. Division: Boston, Mass.

DRUM TUMBLING MACHINE

Illustrated is one of several machines for rolling and/or tumbling standard steel containers of all capacities:

To mix your finishing materials in suppliers' drums; to avoid fire hazard of open drums; to avoid contaminating one product with another; to avoid cleaning of equipment between mixes; to avoid delays—material is ready when needed; drums can be tapped without removing from tumbler; portable ramps permit fast insertion and removal of drums.

Hundreds of these machines are in constant use by the country's largest plants.

Send for Literature!

THE VOL-U-METER CO., 75 Wilbury Place, Buffalo, N. Y.

any strategic materials. It dries about the same as lacquer and can be brushed, sprayed, dipped or roller coated. Altogether it seems to me to be a very worthwhile addition to the line of finishing materials now on the market.

We suggest you test the sample (which we are sending) on acetate and celluloid and also on the wooden beads. We can supply it in practically any color. We are limited in the use of pigments but can produce light yellows and reds with the use of dyes which are allowed. . . . —Randolph Finishing Products Co.

Bronze Powders

Will you kindly forward to us any information that you may have concerning bronze powders? We notice an item in INDUSTRIAL FINISHING for July regarding this item. We would like very much to get information as to where we could secure some of this material.—T. & S. Mfg. Co.

We are making a guess that it is the item entitled "Bronze Powders Available until December 15," on page 7, to which you refer. If this is the item that interests you, the O. A. Both Corp.'s address is 114 Pearl St., Boston, Mass.—ED.

"Plated" Finishes Again

In the March issue of your magazine, on pages 7 and 8, we notice an item headed "Plated Finishes Look Like Electro-Plating," which we take is a reply to a question asked in a previous issue. This is signed "J. R. Co. (Ornamental Hardware and Accessories)." We are very much interested in this and would appreciate your advising us the name and address of the firm manufacturing this product, so that we may get in touch with them.—T. S. W. Co. (Woven Wire Screens).

Heater for Burn-in Knife

We would appreciate it very much if you would send us the names of manufacturers of the small electric heaters used for heating burning-in knives. We have used these previously but do not recall the source from which they are obtainable.—C. Furn. Co.

Spray Gun Finishing

My Master's Thesis subject concerns Spray Gun Finishing and I am finding it to be a fascinating topic. I am now, however, at a point in the study where

194-?

Some year the war will end. Swords will be beaten into plowshares, and golf clubs and refrigerators.

There will be a swing back into the things we buy because we like them and not because they are a grim necessity.

You are planning these things now, or should be. Let us plan with you toward the finish for 194?, whenever it is.

We welcome any call for co-operation on long-range planning for the finish of the future.

Meantime, for 1942 and as far as we can see, we shall do our utmost to supply our customers with the best available materials and service permitted by wartime conditions.

The Varnish Products Company

5208 HARVARD AVENUE

CLEVELAND, OHIO

IT IS NOT TOO EARLY

to be giving thought to changing and improving the finish on new holiday items with a spray coat of beautifully colored

COTTON WOOL OR RAYON FLOCKS

Eye appeal and a velvety touch are important contributions to easier selling of items thus coated. The small increase in cost is easily more than recovered through the immediate interest of buyers who want "novelty" to sell. Many Patriotic novelties can be enhanced in beauty with RED, WHITE AND BLUE.

Write to Headquarters for Samples and Color Cards.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's leading flock mfrs.

I need to find any and all reference materials pertaining to my problem. Many manufacturing concerns have referred to your publication, INDUSTRIAL FINISHING, for articles covering all phases of this subject. May this material be reviewed and under what stipulations? Any help that you can give will be deeply appreciated.—I. K. V., Assistant Professor of Education, Division of Industrial Arts, Ohio State University.

You are welcome to look over all of our published articles. They are in bound volumes in our office.—ED.

Infra-Red Lamps

We would be obliged if you could let us have catalogs or particulars on infra-red lamps for fins and grenade bodies, etc.—The Wearwell Cycle Co., Ltd., England

Metallic Finishes for Wood

In the July issue we note a "Letter from Readers" item wherein mention is made of metallic finishes for wood. We would appreciate your furnishing us with the address of the Allied Finishing Specialties Co., or putting them in touch with us.—M. Casket Co.

The address is 2601 W. Grand Ave., Chicago, Ill.—ED.

Critical Materials

If convenient, we would appreciate a copy of the article entitled, "Conservation of Critical Materials in Sprayed Coatings," which appeared in your May issue of INDUSTRIAL FINISHING.—S. M. Co. (Ordnance Plant).

Speed-Bloc Sander

We note an item about your Speed-Bloc Sander on pages 23 and 24 of the February 1942 issues of this magazine. Will you please be good enough to advise us the address of Sterling Tool Products Co.? If you have any circulars please forward them.—M. P. Co.

It is 365 E. Ohio St., Chicago, Ill. —ED.

Tumble Finishing

Will you please advise us what literature is available on tumble finishing of small articles; as for instance, paper ferrules which are now used with pencils?—Koh-I-Noor Pencil Factory.

Information supplied.—ED.

(Continued on page 72)

'HE FIGHTING CHINESE SOLDIER SAYS:

(TRANSLATED)

"DOWN WITH THE JAPS!"

. . . In any language it spells doom for the Axis!

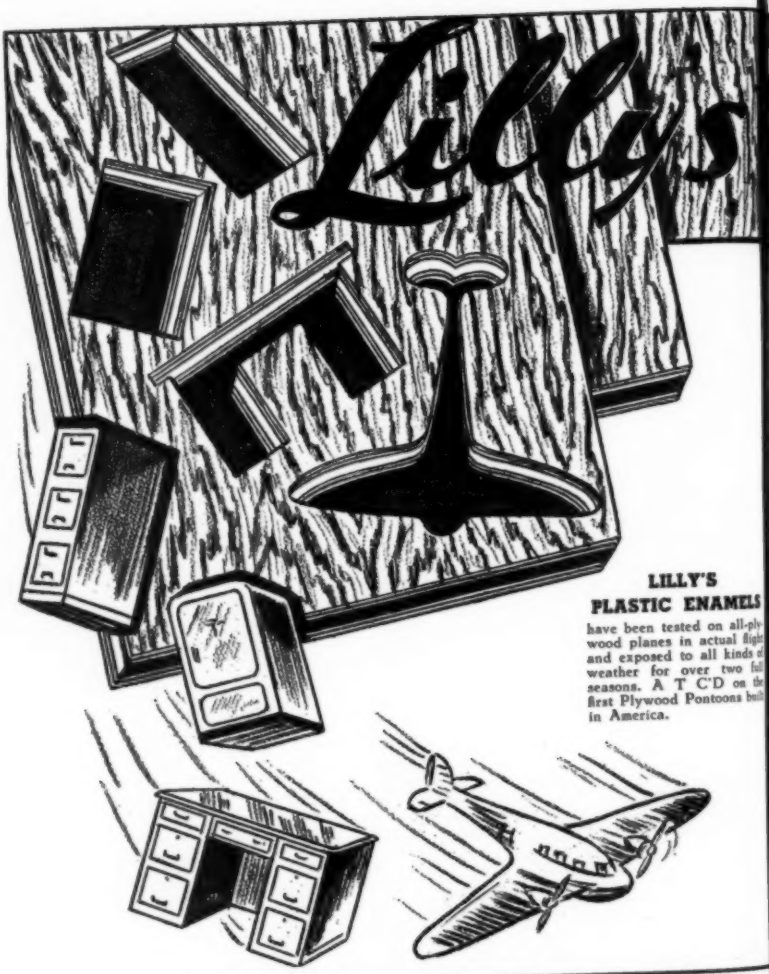
CHINA is one of the great United Nations fighting side by side with the U. S. A. to wipe tyranny from the face of the earth and give free men a chance to live.

China is one of the countries from which . . . in normal times . . . STILLE-YOUNG import raw materials for STILLE-YOUNG Lacquers, Fillers, Stains, Enamels, Paints . . . quality products that help in the war effort with protective coatings *that really protect.*

HE **STILLE-YOUNG** CORPORATION

MANUFACTURERS · CHICAGO

LACQUERS · FILLERS · STAINS · ENAMELS · PAINTS



THE LILLY COMPANY

HIGH POINT, N. C.

PLYWOOD

FINISHES

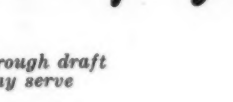
are backed by years of experience in making finishes for wood . . . and there is a Lilly Plywood Finish for every plywood product from airplanes and gliders to cabinets, desks, refrigerators, etc. Now that plywood is being substituted for metal in the manufacture of many products a wide variety of plywood finishes is necessary and we invite you to consult us on a satisfactory and suitable finish for your particular product. The facilities of three plants are at your disposal: Indianapolis, Indiana; High Point, N. C., and Gardner, Mass.—get in touch with the one nearest you.

LILLY VARNISH COMPANY
INDIANAPOLIS, IND.

Protective Coatings for

I hope you may find some "meat" in the rough draft which I am enclosing, and with editing, it may serve your purpose.

Some of the uses hinted at in the enclosed are of a measure of great importance and, when this mess is over, I believe they will serve as a basis for a huge development. If I can be of further aid to you, I know you will not hesitate to write me.—



THE pressing necessity of the war effort program has greatly increased the demands made upon the protective coating industry for new and improved types of finishing materials. Industry has been asked to set up new standards of performance of applications which, for the most part, were unknown under peace time.

The administration of Government orders is being conducted on the premise that restrictions upon the use of raw materials for non-essential purposes have been imposed to make available for the needs of the military and allied branches of the Government whatever raw materials they would need for various purposes. These direct and indirect military needs are slowly passing from a state of potentiality to one of actuality as Army, Navy, Lendlease, etc., requirements become more clearly defined.

The very habits of Mr. and Mrs. America have been sharply and critically altered by the advent of total, global war and we are asked to conserve our raw materials and divert them to the most essential channels.

The protective coating industry plays a tremendously important part in our war program, serving as it does aircraft, ordnance, chemical warfare, quartermaster, signal, navy and other important branches of our war machine. When we think of protective coatings we must consider not only raw materials (and their substitutes) but their application and performance. Among some of the outstanding protective coatings that are widely used are:

ALKYD RESINS: Use is increasing. May be mixed with lacquers, ureaformaldehyde resins, drying oils, etc., for exterior finishes.

PHENOLIC RESINS: Possesses durability, speed, chemical and water resistance and are used for coatings on patrol torpedo boats.

MELAMINE RESINS: Used in enamel coatings, producing hard type of baking enamels.

UREA RESINS: May be mixed with alkyd resins, producing hard

War and Civilian Uses

BY RAY C. MARTIN*

baking enamels. These "modified" thermo-setting resins retain color and accelerate baking speed.

ACRYLIC RESINS: These water-white resins are known for their alcohol resistance, water resistance and general chemical resistance. Used in textiles, metal and leather finishes.

CHLORINATED RUBBER: This material is outstanding in its high chemical resistance and may be employed in alkaline surface paints and in fast-drying enamels.

VINYL RESINS: There are several types finding application in the protective coating field. The copolymer vinyl chlorides-vinyl acetate resin is most frequently used. Since the resin is not compatible with drying oils, it is used in much the same manner as lacquer, being handled in volatile solvents. Use is particularly adapted to metal-can liners, coating cloth and paper coating in the metal-can replacement program.

Industrial Applications of Protective Coatings

ELECTRICAL FIELD: Heavy electrical cables. Aircraft wire insulation. Motor coil insulation.

CHEMICAL AND AMMUNITION: Torpedo parts; shell casings; ammunition containers.

PRECISION TOOLS AND INSTRUMENTS: Machine screws; fine metal parts (against rust and corrosion).

ARMORED VEHICLES: Tanks; convoy mobile equipment; cassions.

SHATTERPROOFING OF GLASS: Quick-drying adhesive coatings for application to glass.

LUMINOUS PAINTS: Air raid shelter directions; subway and general direction indicators.

CLOTH COATINGS: Raincoat and hospital sheeting; waterproof cloth impregnation.

METAL REPLACEMENT: Coatings for spiral and convolute fibre containers; collapsible tubes.

AIRCRAFT: Frame construction; instruments and gauges; fuselage; moldings; bomb sight parts.

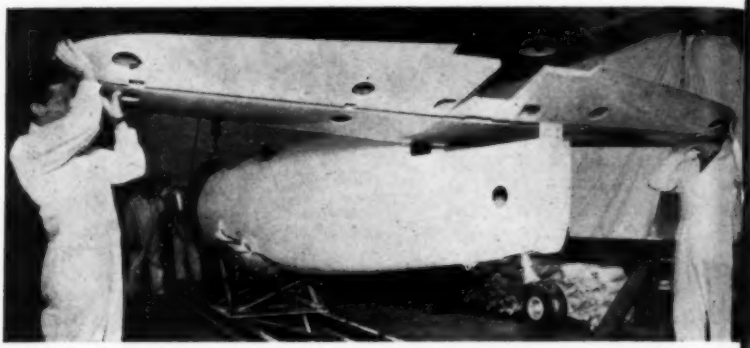
Plywood and Laminated Wood To Play Important Role

Of outstanding interest is the part that wood and synthetic resin is playing in our metal replacement program. This wood-synthetic resin combination is used in our patrol torpedo boats and in aircraft. The material is of three kinds: Plastic-bonded plywood, plastic-bonded laminated wood and compregnated wood.

By comparison with the metals, wood is relatively cheap, machineable and plentiful. Its tensile strength, "with the grain" is greater (weight for weight) than structural steel, and with the advent of synthetic resin glue application (within the past ten years) the

(Continued on page 58)

*Author of "Lacquer and Synthetic Enamel Finishes." Now Consultant to Plastics Unit, Chemical Section of War Production Board, Washington.



Assembling the molded-to-fit parts of a plywood airplane. Press Association photograph.

Surface Treating New

LAMINATED plywood in various forms, which has been filtering gradually into innumerable uses and industries for several years, finds itself saddled abruptly with the task of carrying on from where a great deal of diverted sheet steel has abandoned domestic merchandise manufacture.

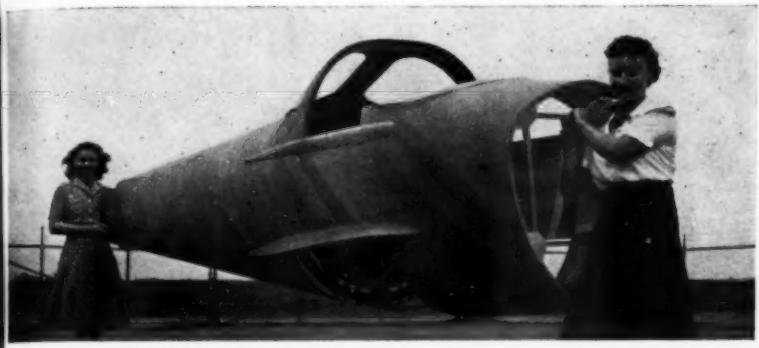
Such articles as refrigerator boxes, filing cases, washing machine housings, air-conditioning units and miscellaneous domestic cabinets—to mention a few—have already made the change from sheet steel to wood laminations.

The finishing of laminated wood surfaces as a part of furniture construction is familiar to everyone and presents no particular problem. Adaptations of plywood to a simulation of metal construction in both appearance and durability are another matter entirely.

BY W. T. SMITH
Physical Testing Laboratory
Roxalin Flexible Finishes, Inc.

It has appeared that, in some cases at least, the plywood finish has not been afforded recognition as the specialized problem it actually is. Wood finishes in general, with few exceptions, are gradually regimented into a certain schedule of procedure for a stipulated result but laid down on a sufficiently broad basis to offer a margin of safety embracing all or most of the ramifications and vagaries of behavior of non-homogeneous material.

The finishing of sheet metal—an inert, carefully controlled, manufactured material—may be stabil-



This new plywood fuselage is light, strong and durable. Press Association photograph.

Plywood for Durability

Since plywood has become the No. 1 alternate for sheet metal in the manufacture of numerous products for both war and civilian uses—even for outside exposure—the necessity of making its surfaces waterproof and really durable has become one of outstanding importance.

ized and standardized to the point of automatic precision by a reasonable control of cleaning processes and preparation and application of the coating agent. A wood surface, however, is of constantly varying texture, density and internal stress, fluctuating in moisture content with atmospheric changes and subject variously to grain raising, surface checking or warpage according to the method of cutting and laying the laminae, the species of wood and the method and agent in bonding the adjacent ply. Wood surfaces are, in brief "consistent only in their inconsistency."

The easing of the burden of the finisher of plywood substitutes for steel will begin at once when the problem is not classified as a merchandise finishing task—viz., of filing cabinets, refrigerators, etc.—but as a wood finishing problem and is approached and conducted as such. Few ex-fabricators of sheet steel articles are, or employ, wood finishers. Herein lies a great deal of the difficulty claimed in producing a satisfactory finished appearance and protection on their wood surfaces.

Plywood may be classified, basically, into two classes according

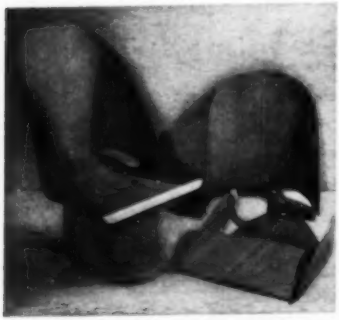
to the type of bond used in joining the elements. Glue-bond plywood, whether hide, vegetable, casein or blood albumen adhesive is used, offers a marked limitation, of varying degree, to the action of moisture.

Hide and vegetable glued plywood has no appreciable moisture resistance and is suitable for uses only corresponding to that for furniture or for interior work where some conditioning of the atmosphere is practiced, as in homes and offices.

Casein and blood albumen bonded plywoods have a much higher normal resistance and are suitable for damp areas such as basements or in unheated interiors. Neither is adapted to complete outdoor use or to exposure to excesses of moisture as in the case of air-conditioning equipment.

Ordinary Glued Plywood Unsuited to Outside Exposure

It must be understood that no plywood with a moisture-susceptible bond can be rendered weatherproof or highly water resistant by any surface film. It is a serious mistake to believe that such plywood can be fortified to such an extent and to thus impose an unattainable responsibility on the finish.



Aircraft seats made of formed plywood. Photograph, courtesy of the Catalin Corp.

In the case of furniture of laminated construction, damaged by moisture or water, it has been observed by almost everyone, on occasion, that on exposure to an excess of moisture, the plies of wood separate as a preliminary to failure of the finish. Not infrequently, in fact, complete separation of the plywood will occur without failure of the finish, which will remain intact on the loosened veneer.

Penetrating Sealer Treatments

The sole function of preliminary penetrating sealer treatments for moisture resistance is for the protection of this critical bond of the film to the wood. No such treatment will offer material aid in postponing the moisture failure of the bonding agent of the wood laminae if it is normally so affected.

The type of plywood, as distinguished above, will not have a specific bearing on the material or procedure used in finishing. The type of finish to be applied will be governed by the conditions the surface must withstand. Also, the type of plywood will be selected according to the bonding agent on a more or less parallel basis. It follows that outdoor types of finish go on outdoor plywood for outdoor exposure. Conventional indoor finishes are adapted to any wood surface for strictly interior work, while glue-bonded plywood is unsatisfactory for complete outdoor exposure under any finish.

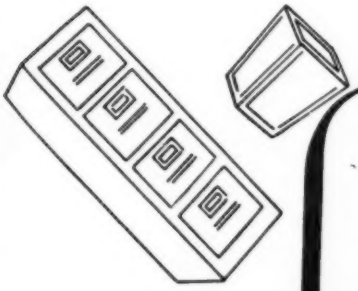
Resin-Bonded Plywood

Resin-bonded or weather-resistant plywood has, at each bond line, an inert, virtually indestructible, highly efficient barrier to the passage of any fluid or vapor. Hygro-

RELIANCE

OLIVE GREEN FINISHES

Olive green finishes that can be easily applied and with assured results are hard to find. If olive green on wood is your problem too, investigate the Reliance finishes listed below. Each was developed for specific uses and has been proved both in our laboratories and in actual use by reliable manufacturers. . . . You will appreciate their unusual advantages: RV8294 — ONE COAT OLIVE GREEN, for instance — Covers in one coat; Dries to Lacquer hardness overnight; Provides greater coverage and lower unit cost; Is smooth — hard — marproof; Sets "dust free" in 30 minutes; Will bake in 1½ hours at 130° F.



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RV-8294 ONE COAT OLIVE GREEN
Reduces 4 to 1 with naphtha. Lacquer hardness and mar-proofness with enamel economy.

NO. 8383 OLIVE GREEN STAIN
Reduces equal parts with naphtha. Gives a uniform semi-transparent olive green color that harmonizes with office furniture.

NO. 8381 OLIVE GREEN FILLER
For use under No. 8383 Olive Green Stain on oak and open pored woods. Not necessary to use this coat on gum, maple or close grained woods.

NO. 8387 OLIVE GREEN LACQUER
Reduces 2 parts of lacquer to 3 parts of thinner. Use as a top coat or as a complete two or three coat finish. Very economical.

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Varnish Co., Inc.
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Toward Tomorrow

To keep finishing ahead of ever increasing war production, BINKS has developed faster and better techniques. These will be available to all when peace is won.

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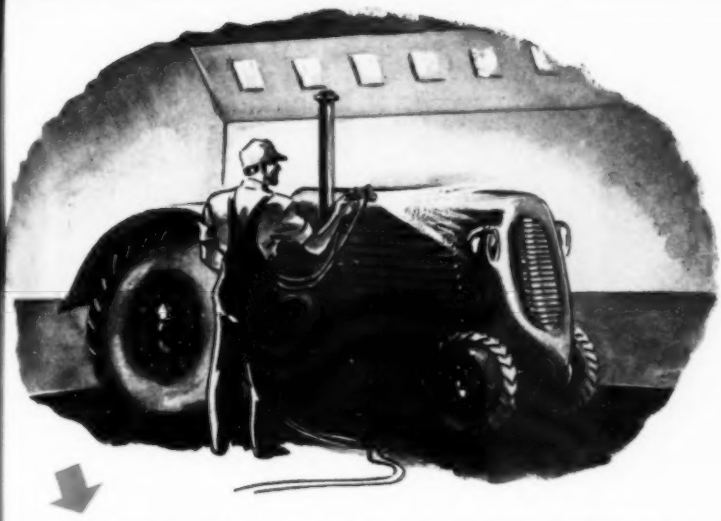

Today our whole energy is directed toward winning the war. That alone is our objective.

But, without conscious effort we are preparing ourselves for that great tomorrow that will dawn when peace comes. While designing the equipment needed to keep finishing ahead of the increasing tempo of war production, we have learned many things that will be of infinite value to peacetime industry.

When the war is won, and we can turn our attention from finishing tanks, planes, bombs, shells and the other goods of war to the finishing of peacetime products, we will have more to offer manufacturers than at any time in our long history . . . and that means a lot.

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THE sea is tough on paint. Only the best paint is good enough to stand up in maritime service. It is significant, therefore, that Johnson's Wax-O-Namel is being used by more and more manufacturers of maritime equipment. For example, Johnson's Wax-O-Namel is now being used by manufacturers of life rafts, clothes lockers, metal bunks and other seagoing equipment for the U. S. Maritime Commission.

Many shell boxes, heater and air conditioning units, soap boxes and much other equipment, large and small, for the Navy are now finished with Johnson's Wax-O-Namels and Johnson's Lacquers.

The makers of Johnson's Wax supply product finishes in great variety to meet Government specifications. To war materiel contractors we can promise speed in developing special finishes for tough jobs. Write us.

S. C. JOHNSON & SON, INC. • Product Finishes Division • Racine, Wis.

scopic moisture or solvent vapors of coating agents do not pass these barriers to any appreciable extent, with the possible exceptions indicated herein under reference to blistering. This is not true of glue-bonded plywood, with its partially soluble more irregular joint line which permits the wood to react more like a piece of solid wood as pertains to absorption of solvents or water vapors and their subsequent release.

We therefore have, in a resin-bonded plywood, only that wood mass lying outside the first joint line, to wit, the face veneer with which to contend in applying the protective coating. There is no egress for solvent vapors other than back through the film whence they came, and little hazard of moisture attack by penetration from the reverse side of the piece.

It has been the function of the time-honored penetrating oil sealer, so widely used on plywood, to protect the surface film against the inroads of moisture acting on the bond of the film to the wood. The added retention of the surface film under adverse moisture conditions has always been the sole accomplishment of such a sealer, regardless of the intent in its use.

For Outside Exposure

There is in current practice, some considerable adherence to the clear penetrating sealer as a preliminary treatment on plywood. Since plywood with water-soluble bonds is not adapted to exposure to moisture in any event, and since resin-bonded plywood has impermeable divisions at each joint line, it would seem that the necessity for the penetrating sealer is not well founded as a medium of moisture resistance, although it may aid in retarding suction on rough-textured

Semi-monocoque rear fuselage section of plywood. Photo, courtesy Mahogany Assoc.

woods. Severe moisture exposure tests fail to justify its use on plywood, though solid wood is another matter and usually shows an advantage in a penetrating first coater.

Resin-bonded plywood, adapted to outdoor exposure and generally severe moisture conditions will remain physically intact much longer and retain an organic finish film much longer than will the equivalent mass of solid wood. For general uses, the effect of the bond of the laminae is so vital that its nature, together with the normal resistance of the finish film used, far overweighs the significance of the species of wood used in the plywood fabrication. While wood texture will affect procedures in the matter of processing necessary to obtain a smooth unbroken film surface, it will have but little bearing on the actual physical durability and resistance of the finish.

The application of finishes to plywood within the practical range of air drying to a low bake of 175° to 200° F., will be attended by two major obstacles, namely, the attainment of a smooth, perfectly filled surface and the avoidance of bubbles and blisters in the film of the forced dried or baked systems.

The problem of the smooth surface will embrace two phases, and

Carefully cut sections of veneer are positioned over the fuselage form, taped to hold them temporarily together, and then sprayed with phenolic-resin adhesive, after which another layer of veneer will be laid on crosswise. This is repeated until the required thickness is built up. Then pressure and heat are applied to "weld" the mass together. Press Ass'n Photo.

center primarily on two species of wood, namely, the conspicuous broad grain flakes of Douglas fir and the large pores of mahogany.

The broad flakes of fir can be concealed effectively only by surfacing the wood with a highly pigmented material and then sanding thoroughly to a level surface. This is a case where, on occasion—depending on the nature of the surfacer used—it might be advantageous to use a thin penetrating seal coat to stop the suction of the more porous areas.

Fir surfacing is something of an optional problem in that a surfacer of relatively low pigmentation and with a free-flowing vehicle will stop suction and act as its own sealer; but it will be tough sanding and may even lack sufficient inert body to permit thorough surfacing without cutting completely through and forming spots again, to the detriment of the appearance of the top coats.

A compromise may often be effected by applying a very thin coat of the surfacer first as a seal, followed by a full coat for surfacing body. It is also feasible to reduce or blend this first coat with a proportion of clear varnish vehicle, recommended by the supplier, as a means of increasing the vehicle ratio in the interest of penetration.

The easiest "out" on fir plywood, in the face of the amount of expensive sanding necessarily entailed to produce a smooth finish, is in the use of one of the popular textured finishes with its all-concealing texture pattern which will effectively erase conspicuous wood grain.

All of these textured finishes (I do not include crystallizing or crackle lacquers) are necessarily formed and set in elevated temperatures in which plywood, only too often, is responsible for the raising of some most amazing blisters.

This annoying persistent behavior of plywood has given rise to a great deal of experimentation and controversy, not to neglect the many interesting to fantastic theories as to the cause.

(To be continued)

Mellon Institute Doing Aeronautical Research for Navy

The Navy Department recently established a basic research project on problems relating to the operation of specialized aviation instruments at the Mellon Institute of Industrial Research, University of Pittsburgh Pittsburgh, Pennsylvania.

The scientifically trained personnel working on this project in behalf of the Bureau of Aeronautics includes the following members of the Mellon Institute: Dr. George E. Barker, Senior Industrial Fellow, George E. Alter, Industrial Fellow, and Charles E. McKnight, Fellowship Assistant. Other specialists will be added to the staff as the research progresses.

A broad survey of the problems involved now is being made by Dr. Barker with cooperation of others . . .

New brushes are scarce—and high priced . . . It will pay you to put your old hard-caked veterans back into service. Imperial Rapid Brush Cleaner will do it for you. It will also insure long life for *all* your brushes.

No mixing necessary—Imperial Rapid Brush Cleaner is ready for instant use. Effective on paint, varnish, lacquer, enamel or shellac. No washing or further cleaning—there's nothing in Imperial Rapid Brush Cleaner that can affect the subsequent finish. . . . And it won't make brushes *limp* or *flabby*. No indeed, it leaves them sleek and glossy, with the "spring" and vitality to do a good job.

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WILSON-IMPERIAL COMPANY
Dept. E-82, 115 Chestnut Street, Newark, N. J.

IMPERIAL
RAPID
BRUSH CLEANER

Ditto Departures From

BY HUBERT JAGGER
Assistant Chief Engineer
Ditto, Incorporated, Chicago

EVERYONE who has any connection with order invoice systems, payroll methods, accounting systems, and general duplicating work is familiar with the Ditto products and the savings they perform.

As a company who early recognized the forthcoming needs of critical materials, and that shortages on certain types of finishing materials were bound to occur, the following highlights along the path of change may spread a few bright rays and give ideas to those of like circumstances.

Frankly our rearrangement of finishes started as a purely substitute proposition, ending in surprising results. We have always built Ditto machines with an eye to superiority in sales appeal, and when it became necessary to cast around in a departure from standards (somewhat in the manner of the bloodhounds when Eliza was crossing the ice), paints not only showed the way out of many difficulties, but impressed on the writer the fact that an adherence to certain finishes was, in a lot of cases, purely a matter of habit.

Changes Made Rapidly; Savings Effected, Too

Changes, when started, continued at quite a rate and, in many instances, resulted in considerable savings with no sacrifice of quality. Nothing was approved without adequate tests—proof of rust resistance, proof of "parts harmony," proof of the appeal of the finished product.

Already, before the present materials situation had arisen, we had done considerable experimenting with wrinkle finishes on Ditto machine cabinets, and immediately afterwards we extended the use of these to the more expensive machines due to prompt field reactions. Customers' responses to the fine rough finish were sufficient encouragement for further work; and later, the finish on all Ditto machine frames and cabinets underwent a re-standardization.

Stereotyped Standards

Savings were not apparent at the outset, nor were they sought, but later, when prime quality steel, always previously used, became unobtainable, we found that just as good a finish resulted with the lower grades, with no impairment of utility, and the savings were (like greatness) forced upon us.

Fine results on cabinets were obtained by spraying three or four coats directly on the steel. On die-cast frames, it was found necessary to use a baked-on filler, spray with air-dry "Baflex" around parts to have a striped effect, mask off these portions, spray a heavy coat of wrinkle and bake one hour at 300° F.

The latest Ditto highspeed liquid process duplicator pictured in Fig. 2, gives you a conception of the results obtained.

Fig. 1—Flat-bed gelatin duplicator.

Fig. 2—Ditto liquid process duplicator.

Rustproof Finish Replaced Aluminum, Brass, Copper

On the regular flat-bed gelatin duplicator line (Fig. 1) Ditto had standardized a few years ago on aluminum bed-plates or platens. While expensive (as each plate was semi-punched with thousands of raised dots to minimize the friction of the winding roll) they kept their appearance well because of a de-plating process, in spite of contact with water and glycerin. A steel substitute was proposed, a chlorinated-rubber base, wrinkle covered, providing the rustproofing as well as the frictionless feature —and tests made under simulated field conditions showed excellent results.

Duplicating was actually improved with the new type of platen, and the chlorinated-rubber rustproofing finish was added . . . .

Sponge pans and roller moisteners on these machines had hitherto been made exclusively from brass. When a shortage seemed likely to take place, we switched to steel with the chlorinated-rubber protective finish, already tested, and kept rolling along.

Copper tanks for holding the Ditto direct process fluid had been proved over years of experience to be the "only" tank to function without corrosion from the alcohol content and other ingredients of the fluid. We made experimental terne-plate tanks and several paint finishes were tried, but as the tank was a soldered job, no baked paint, impervious to the fluid though it might be, was satisfactory. (We tried them and our tanks collapsed in the ovens.) A final solution was in air-dry "Lintite" paint which did the trick, the paint being thoroughly applied so that every corner and seam of terne-plate was covered.

Cork Floats Coated

The Lintite paint proved useful elsewhere, for it solved a problem on the tank level gauges, which employed a cork float. These cork floats, when used uncoated, became alcohol logged and sank, so our practice was to dip these in latex (remember the stuff?). Now we dip them in Lintite paint, get the results, and save the difference.

Replacing Plated Finishes

Plating problems were next anticipated. The old formula of heavy copper, buff, heavy nickel, buff, heavy chrome, color buff, was on the pan. The F5 flat-bed carriages were examples of this old Biblical verse, but a gray Polymerin paint took care of the center portions, while a dark green wrinkle fixed up the die cast ends. The black bakelite handle in the center formed a suitable break in the expanse of Polymerin, so we were in no way the loser—and a chapter was added to the New Testament.

It might be stated that cadmium was on the gold standard by this time and the reader is assured that all kinds of finishes as well as paints, were subjected to exhaustive proving tests. The results of some of these tests dispelled the ideas on Santa Claus held by our proving engineer, advertising statements notwithstanding. The Parkerizing process proved, on bearing studs, shafts, etc., our ace in the hole on rustproofing, and provided, in the case of exterior bolt heads, plates and the like, an excellent base for the Polymerin appearance finish.

The Polymerin paint then replaced the aluminum solvent-proof finishes on paper feed and receiving tray guides on most machines, being sprayed directly on the steel —one coat only.

Treated Wood Parts Replaced Rubber

Rubber coverings on rollers were next considered and wooden substitutes were tried (lignum vitae, maple and birch) in certain places. Dimension control factors caused trouble, and experiments were conducted with various sealing compounds and impregnators. A Lignotite impregnation minimized variations satisfactorily when applied as follows: 1) Soak wood for 10 minutes in solution; 2) dry for two days; 3) rough machine; 4) dry for 1½ days; 5) finish machine. A finish coating of walnut paint was then applied for the sake of appearance. This Lignotite finish served its purpose so well that all wooden spindles used in connection with machines and rolls are now so treated.

(Continued on page 85)

Case Histories in Bottles

FOR YEARS samples of every formula for an Egyptian finish have been kept on file on the shelves of our laboratories. These include Egyptian finishes for industrial needs and now include the all-important finishes for war equipment.

This assures uniformity and means that by using Egyptian finishes you eliminate guess-work and uncertainty. You enjoy the fruits of long years of research and experimentation in developing the ideal finish for your purpose.

At present we are equipped to supply promptly specified finishes for equipment and materials used in all branches of the Service and war production.

And when civilian needs can again receive first attention your pre-war orders can be duplicated, identically, for we have their "number" — in these bottled samples of success.

THE EGYPTIAN LACQUER MANUFACTURING CO.
Rockefeller Center • New York

EGYPTIAN FINISHES

EGYPTIAN
Superior **FINISHES**

This furniture was especially designed to meet the need for the small home and has been priced to fit the average war production worker's income. The furniture is made of birch and is upholstered in good durable fabrics. American Furniture Mart photograph.

July Furniture Market

BUSINESS, STYLE AND MATERIAL HIGHLIGHTS

BY RUTH HAMMOND
American Furniture Mart

THE FURNITURE INDUSTRY, long "child of fortune" when other industries met and were conquered by priorities, faced serious problems at the summer national home furnishings market at the American Furniture Mart.

Gathered at the American Furniture Mart during the two-week period of the market, manufacturers and retailers listened and learned from government agents, the Army and Navy, and association chiefs, that building the world's greatest military machine means sacrifices for every industry.

There was no reaction of defeat however, in the face of probable hardship, but rather the beginning of a gigantic struggle to maintain the industry's place as No. 1 in the nation for consumer's durable goods and, at the same time, march to war with their money, materials and machines.

Wood Shortage Feared

Under the impression that regardless of war needs there would always be plenty of mahogany for the furniture manufacturer, surprise met the statement of George N. Lamb, secretary of the Mahogany Association. According to Mr. Lamb, practically no imports of mahogany have been made at the present time which is ordinarily the heavy shipping season. Axis submarines, invading our coastal waters, have stopped shipment of logs and the government has been forced to lower specifications for ship and plane building.

Other hardwoods, which could be substituted for mahogany in the nation's war program, are also on the shortage list and furniture manufacturers are facing the most critical problem in their history. "Some manufacturers have large stocks on hand but," said Mr. Lamb, "these stocks should be offered to the government for any use that can be made of them."

The Canadian freeze order on all birch hardwood wrought hardship among the northeastern factories who have always used this source of supply for their lumber needs. Turning to other sources they found that the metal industry has turned to lumber for many of its needs, and logs have not been cut at the rate they are being purchased.

Lack of man-power has also taken its toll in the logging industry and the cry of "timber" has not been loud enough to bring women to this field.

Steel has also been shut off from the furniture industry and already manufacturers are experimenting with other types of springs and

springless furniture. Although a steel spring order has not yet been issued by the War Production Board, manufacturers are expecting it and are preparing themselves to do without this material.

Wooden springs, an unthought of alternate several months ago, made their appearance at the market and were acclaimed as a possible solution to the steel shortage.

Made of plywood and shaped like an accordian, the springs have almost the same amount of resiliancy as steel and after hard tests have been found to regain their original shape over a 12-hour period. Although laboratory tests are not yet completed, they have been subjected to rigid experiments and have performed well. Used in both mattresses and chairs, manufacturers stormed the space where they were being shown and are awaiting further developments with increasing interest.

Springless furniture, featuring body-contour, was also shown. After the first shock of sitting down on a hard seat, they proved as comfortable as the ordinary lounge chair and sofa. Dressed up in attractive fabrics, the pieces, intended merely to show what could be done if necessary, were purchased heavily.

Small Dealers in Attendance

The fact that the summer market was attended by a majority of small dealers rather than the large department store buyers made many believe that buying would be poor. When the final check was made, however, it was found that some manufacturers did a volume equal to and, in many instances, larger than that of 1941 for the same period.

Makers of case goods did not anticipate a large market as they have sold heavily during the last six months. Retailers have a large inventory of this merchandise on hand and the small dealer was only purchasing to replenish depleted stocks. Upholstered goods and novelty furniture went well.

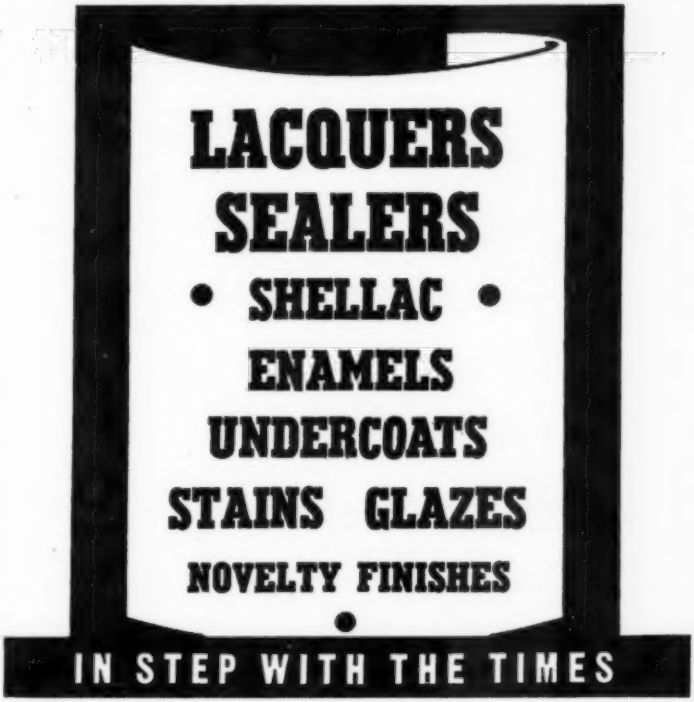
New pieces in occasional furniture were the style leaders in the market. Using glass brick and mahogany or walnut, one group was different from anything that has been shown in the market heretofore. The bricks could be taken out and turned upside down, providing trays which can be used for ash trays, hors d'oeurve trays or growing plants. Of interest is the fact that the manufacturer of these tables, which are so sensational, formerly made lamps.

Lamp Manufacturer Hard Hit

Aside from the appliance manufacturer, the lamp maker is the most serious casualty in the home furnishings field to date. Unless a revision of the WPB order now in effect goes through, they will discontinue production on August 15. Clearing the inventories they now have on hand, they were selling on a quota basis during the market besides showing new lines which will take the place of their former business.

New Styles Feature Utility

Another novel idea present at the market was cross-country furniture. Utilizing the carton or crate that encloses one piece of furniture, the package itself can be converted into additional pieces of furniture. For instance, a chest with five drawers was packed into a carton which, when dismantled, made an additional four pieces including two end tables, a coffee table and a secretary-bookcase. The same idea was used by a bedding manufacturer. The carton holding



IN STEP WITH THE TIMES

Industrial Finishes

that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO

the box spring mattress was transformed into a bed or a bookcase and bedding compartment.

Synthetics Gain Ground

With raw materials becoming more scarce the home furnishings industry is looking upon synthetics with increased interest. Up to the present time practically all finishing materials except shellac have been available, although deliveries are slow. Manufacturers have stored large stocks of finishing materials but the general feeling is that when these inventories are depleted there may be difficulty in replacing these products.

A new synthetic product was brought to the attention of the manufacturers at the market. After three months of experimenting and testing it has been found that the material can be produced in an unlimited supply.

Using the same methods as you would when applying shellac, the product can be used as a finish by itself or as a washcoat to seal the stain. It sands as easily as the ordinary finishing materials and doesn't gum. It can be sprayed, brushed, dipped or tumbled. According to tests it kills all sap stains, has increased water resistance and will not bloom. Lacquer or enamel can be sprayed over it, if desired. It can be impregnated for use as a cover coat, and analine dyes may be added to it.

Inasmuch as synthetics can be regulated and controlled to meet various needs it is possible that they may permanently replace some of the standard finishing materials now in general use.

Also shown at the market was a process of reproducing wood grains and other surfaces on wood, enlarged to include the making of wallboard with a good grain finish. According to the firm producing this material the finish is baked on wallboard; it is as hard as plastic and is very durable. It has the appearance of veneer and is inexpensive.

Simplicity in design was more apparent at the market due to voluntary restrictions by manufacturers on elaborate styling. The necessity to curtail materials and working hours has brought about ingenious methods of attracting attention.

Future Market Dates

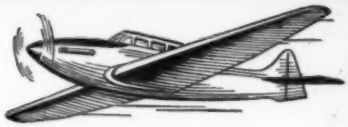
The Board of Governors held a special meeting to discuss market dates and it was decided that the November market would be discontinued for the duration. Naming January 4 to 16 as the next market dates and June 21 to 30 for the summer market, cutting this show down to ten days, the Board is waiting approval of the WPB on these dates. On the whole it was felt that the industry could continue normally with two markets a year. A June showing, combining the May and July shows was considered a wise decision.

Byrnes 50 Years in Shellac Industry

A host of friends joined with business associates recently in felicitating James W. Byrnes upon completion of his 50 years of service to the shellac industry.

Mr. Byrnes, vice president of the Mac Lac Co., New York, N. Y., shellac merchant and bleacher, began his career as an office boy for Andrew Rogers in the original firm of Rogers & Pyatt. Rising rapidly in the industry, Mr. Byrnes became well known in the shellac centers of the world. He also contributed much of his time as a constructive leader and an executive officer of the Shellac Associations.

This publication congratulates Mr. Byrnes upon his successful career in the shellac industry and wishes him many more years of happy association in his chosen work, and continued good health.



We've served users of

PLYWOOD

for many years

MOISTURE REPELLENT SEALER No. 30 has met the severest tests

You have to know wood to successfully finish it... the effects of climatic and seasonal changes—capillary pore conditions —swelling of fibre—adaptation to its unequal contraction and expansion—influence of different glues, etc.

• Put it up to Murphy •

The Murphy Varnish Company has specialized in ***wood finishes*** for over 75 years and has carried on an intensive RESEARCH program, resulting in nationally known ORIGINAL PRODUCTS.

One of these is our Moisture Repellent Sealer No. 30. This sealer has an outstanding record of service on plywood air-conditioning units and cabinets, which have had to withstand atmospheric conditions in all parts of the world... It's ideally suited to fast production schedules. Handles fast and fills well. Becomes a part of the wood, "breathing" with it and keeping it permanently plastic and alive.

Whether your problem involves war work or civilian commodities, put it up to Murphy. Drop a line to our nearest office.

MURPHY VARNISH COMPANY

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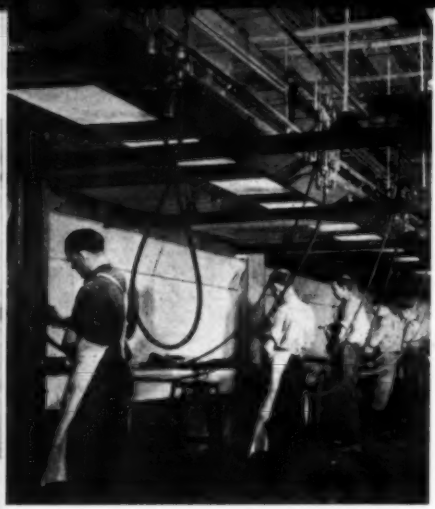
PROTECTIVE COATINGS



Care of Air

BY WILLIAM WILSON
Consulting Engineer

THE EDITOR has asked me to review and add something to a short article on the care of air and fluid hose at spray booths—an article written by a foreman finisher of long experience. Mr. F. F. is right where he states, in his first paragraph, the following:

"The most logical thing to do, when cleaning the outside and inside of a fluid hose used in the finishing field, is to use the same solvent or reducer that is used in the material which has been sprayed. For instance, use lacquer thinner for lacquers, lacquer sealers, lacquer enamel, shading lacquer, etc.; and use naphtha for oil enamels, paints, oil stains, fillers and glazes. Use alcohol for for non-grain-raising stains, spirit sealers, varnishes, enamels and shellac; and use water for water stains."

I disagree with Mr. F. F. where he states further that:

"For spraying such materials as wood fillers, which have silica or other hard abrasive particles in their formulation, I would suggest a brass or steel-lined hose for longer life and service. They are the cheapest in the long run, for this type of work."

I know a company that makes both types of hose, and their experience has taught otherwise. It is a known fact that rubber is used to stop severe cutting when using sand blast; this is because it is resilient.

"Manufacturers of spray equipment have what is known as a hose cleaner . . . a handy device to have where there is cleaning to be done. If the hose isn't going to be used for several days, such as on holidays, during a shutdown for inventory, and over week-ends, it should be and can be cleaned quickly and easily with this hose cleaner."

It is debatable as to the advisability of cleaning hose at the end of each day or to leave the material in the hose through the non-production hours. Knowing synthetic hose as I do, I believe it advisable to clean the hose and equipment at the end of each day. This not

and Fluid Spray Hose

- **Don't use too high air pressure in hose.**
- **Don't submerge hose in solvents.**
- **Don't let paint dry in the hose.**
- **Don't let paint accumulate on the outside cover.**
- **Don't leave hose in hot storage.**
- **Don't kink the hose.**
- **Don't hang it in the middle from a nail or hook.**
- **Don't run over it.**
- **Don't pull and stretch it.**
- **Don't drag it over concrete floors.**

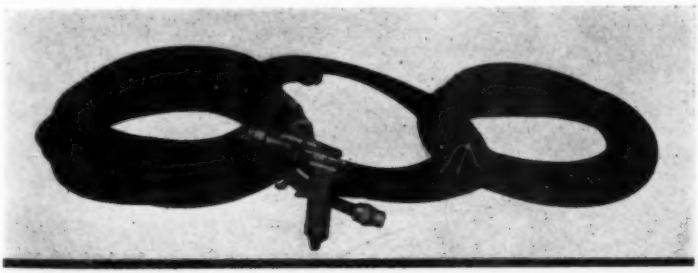
only keeps the hose clean inside and out, but also gets the operator into the habit of cleaning all of his equipment. No one can deny that clean hose and clean equipment will last longer, give less trouble and make a better place in which to work.

"After the hose is thoroughly cleaned, disconnect both ends and leave them open to dry. Do not hang hose on a nail or hook. Roll it in a circle about 18-in. in diameter.

"Lacquers or any other finishing material should not be left in the hose over several days when the hose is not in use. Turning off the valve so that no material remains in the hose doesn't do much good, as the vapors and some material still cling in the hose.

Oil Ruins Air Hose

"Oil deteriorates air hose rapidly and I believe this is probably the greatest cause for replacing air hose that has become useless. Here is where dry clean air is essential. The cause for this deterioration



It is patriotic to save spray hose. Let's all do our part to make our hose last longer.

from oil can be found usually where oil escapes through the pistons and rings of the compressor or through defective water-and-oil separators. See that all compressors are in good running condition. Have oil-and-water traps at intervals along the line from the compressor to the air transformers at the booths. Drain these as well as the compressor tank often. When excelsior or other absorbent material is saturated, remove it and either clean it or replace it with clean material. (When saturated with oil or water, the filter has little or no efficiency). This applies to air filters as well as water-and-oil traps."

Oil in air lines is generally caused by the compressor operating too hot and vaporizing the oil which travels in the air lines. When the air and oil become cool the oil and water can no longer be supported.

All good air-cooled compressors, up to 5-h.p., are equipped with copper finned "after coolers" between the exhaust valve at the compression chamber (where the heat is developed) and the check valve or tank. On water-cooled compressors of larger size, copper pipe is submerged in cold running water in a large manifold after compression.

When a compressor is equipped with an after-cooler and is operating in the proper cycle (pumping 1/3 of the time and idle or not pumping 2/3 of the time) very little oil will be encountered, unless the compressor need any overhauling because the rings or cylinder walls are out of round or gaulded (scored).

When air lines have been oil-coated on the inside there is only one cure and that is to wash the line with solvents or an alkaline solution. A new compressor or an oil-soaked air line will continue to give as much trouble as previously. Oil is most detrimental to rubber air hose as this hose is not made with synthetic compounds which will resist oil. Oil is also detrimental to the outer cover of ordinary synthetic hose, as only the inner tube is made from synthetic compounds.

Clean Dry Air Needed

"I can not emphasize strongly enough the fact that clean dry air is essential to keep air hose from deteriorating, both inside and outside—and also in obtaining a good finish. This is where the most damage occurs to air hose. I have seen air hose that was so oily, from the oil escaping through the filters, that the rubber had become softened. It was wet and sticky and looked like red paint; it 'came off red' when rubbed. This hose showed deep cracks in so many places that it had to be discarded.

"Do not have the hose too long, so that it drags on the floor or rubs against any object that will cause wear by friction while using it. This friction can cause hose to wear through very rapidly."

How Fluid Hose is Made

Perhaps right here it may be timely to reveal something about the manufacture of spray hose from synthetic rubber.

The hose used at spray booths is manufactured by two common methods, namely woven and extruded, or wrapped and molded. Woven hose is very flexible and not apt to kink or split as a result of heavy objects passing over it.

Braids of woven hose determine the working pressure. The threads making up one strand may be any one of several qualities; also, one strand may be made up of various

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If you haven't already experienced the timesaving features of Three-M-ite Cloth Evenrun Bands, why not secure a supply from your jobber today and put them to work on those hard-to-get-at areas.

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numbers of threads. Each braid may be made up of various numbers of strands and the weave may be close or separated, depending upon the quality being manufactured.

With each additional braid the bursting or working pressure is increased, but at the same time the flexibility becomes less as the number of braids increases. These braids are molded in rubber . . . The outer cover is a light film of rubber covering the braids.

The Inner Liner is the Important Part

The inside is the main part of the hose. It is made of various wall thicknesses, dependent upon the material and pressure to which the hose will be subjected. The inside is generally called the inner liner. This inner liner is compounded in almost as many ways as chemists can think up formulas.

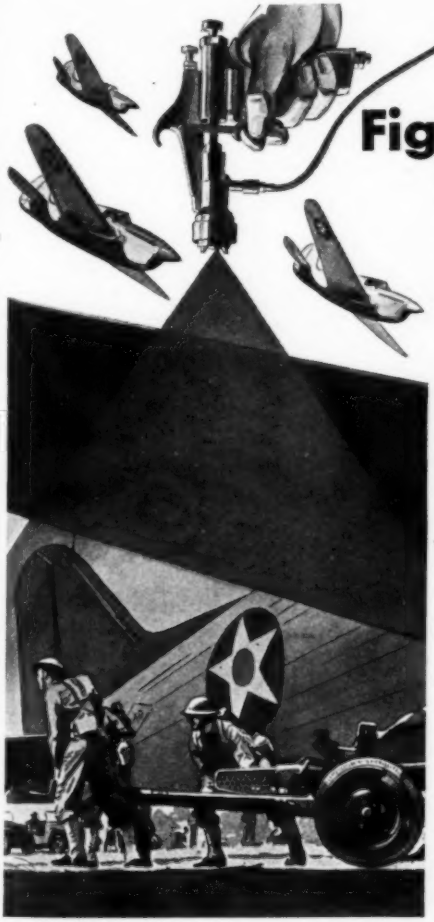
Two well known brands of synthetic rubber have been in general use during the past few years. Each has its own outstanding qualities in certain fields of use. Both have good solvent resistance but according to certain tests one is better for resistance to paint oils and thinners.

After a short aging, the compounded material is extruded, under high pressure, to the inside and outside diameter of the inner liner. The inner liner then has the first braid applied. If a second or third braid is required a thin sheet of rubber is placed between the braids. After the braids have been applied the hose returns to an extruding machine where the outer cover is applied. At this point several methods may be followed. The better method is to cover the hose with lead extruded by extremely high pressure around the hose.

Curing or Vulcanizing

The hose is now prepared for a heat cure or vulcanize. To apply inside pressure outwardly against the lead coating during the curing or vulcanizing process, water is sealed inside the inner liner. This water becomes steaming hot during the cure and creates a high pressure against the lead coating, assuring that all of the materials in the hose are properly vulcanized together.

After curing the lead coat is removed and a pressure test is given each length of hose for any defects or leaks. The hose is then placed on reels and made ready for delivery to customer.



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Lowe Brothers have available a vast fund of current information regarding FIGHTING FORMULAS—U. S. Government specification finishes as adopted by all branches of our Armed Forces.

Lowe Brothers have cooperated closely in the development of finishes for war weapons which must fight all sorts of weather, temperature, exposure, transport and combat hazards. And we are supplying Government specification finishes to makers of war weapons and materiel of every description.

Furthermore, we cooperated to stabilize the color and performance of Machine Tool finishes which became the recognized standard of an exacting industry.

The chances are that YOU may need information regarding application data, thinning ratios, drying schedules, bids or costs on Government specification finishes—in a hurry —so why not benefit by our experience in peacetime and wartime formulations?

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AND MAINTENANCE PAINTS
TO MULTIPLY YOUR MAN POWER EFFICIENCY

Since the war has made rubber our most critical material, it has been necessary to alter all formulas and cheapen the hose so that it is below the quality purchased previous to the war.

With cheaper hose and the critical condition of rubber as it is today, every person using hose should be doubly careful to take extra good care of what rubber hose he has. If only a few minutes are required each day to care for the hose, the management should see to it that the time alloted is used accordingly. A few dollars spent for equipment will often save time and do a better job cheaper.

Painting Metal Aircraft Parts

ANOTHER example of the flexible adaptability of the overhead trolley type of conveyor, and how it serves to make production processes orderly and efficient, is afforded us by inspection of the accompanying pictures, which were taken in one of the aircraft factories.

In Fig. 1, we see the conveyor dipping down to a loading table, where one man is engaged in hanging a simple wire carrier on the empty conveyor attachments as they come along, while another at-

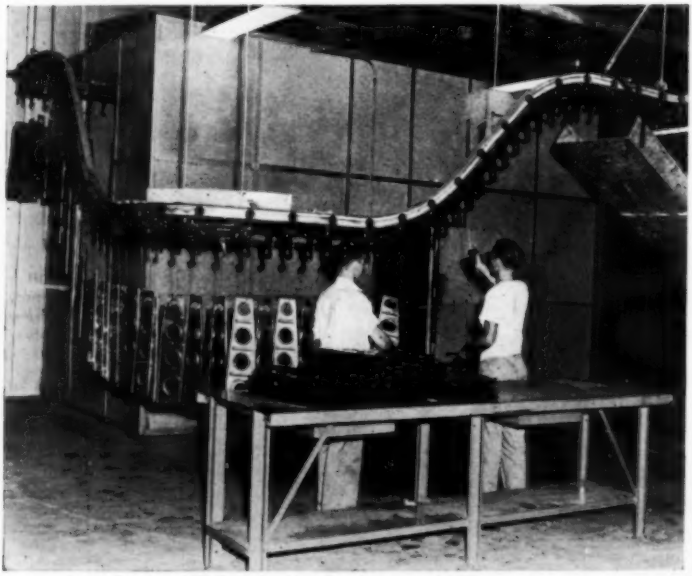

Fig. 1—One man hangs wire carriers on attachment hooks at endless power-propelled chain of overhead trolley conveyor, while the other attendant suspends aircraft parts from the wire carriers. Conveyor travels to left, to and through chromate-primer solution dip tank. At the right of picture is the discharge device which automatically detaches both the aircraft part (now coated and dry) and the wire carrier, discharging both to a waiting truck at bottom of chute. Illustration, courtesy of Link-Belt Co.

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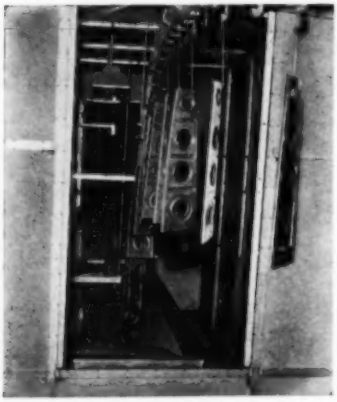

Fig. 2—This overhead trolley conveyor slowly passes metal aircraft parts through chromate-primer solution tank.

tendant hangs an aircraft part on the hook of the wire carrier.

Continuing on its circuit, the conveyor rises and turns to enter the upper part of an enclosure over a dipping tank. The conveyor then descends, this time allowing the aircraft parts to pass through a chromate primer solution, and thereupon again rises toward the ceiling.

The conveyor now continues through an air-drying area and finally discharges the parts to waiting trucks. The discharge is automatic through an ingenious scheme consisting of a spring wire rod which tilts the carrying hook so that the part with its wire carrier slides off by gravity down the chute and into the truck below.

The conveyor line consists of an endless strand of drop-forged "rivetless" chain suspended every 12-in. from ball-bearing trolleys running on the bottom flange of a monorail I-beam track. It is power-operated from a fractional horsepower electric motor. Work-supporting hangers are spaced every 6-in. apart.

Trolley conveyors, being suspended from overhead, make ceilings pay dividends by conserving valuable floor space. And they are helping to speed war production throughout the factories of the nation.—*Link Belt News.*

What Porcelain Enamel Is

PORCELAIN enamel is a form of glass, fused to metal. Its ingredients are about the same as window-glass, but of course are so compounded as to be applicable to a metal base. Because the ingredients are all inorganic, or mineral matter, they have a long life and are not subject to the usual forms of disintegration. Modern science makes it possible to formulate porcelain enamels that have high resistance to all or any forms of physical abuse such as cracking, checking, etc.

After being ground with water and coloring materials, the porcelain enamel is sprayed onto the metal part that is to be coated in porcelain enamel, and dried. The dried or "bisque" coating is very soft. This is then "fused" onto the steel at a temperature of approximately 1,500° F.

What happens is that the pores of the metal open and the porcelain enamel flows into them. After a short period of time the part is withdrawn from the furnace. The pores retract, pulling part of the coating in with them and then close. What remains on the surface is a thin, smooth coating that has all of the qualities of glass, yet just beneath the surface it is enduringly locked in the pores of the metal.

Quick Service

to solve your war-time finishing problems!

• Since the day many finishing materials became critical, Glidden's many laboratories have been busy developing a whole new series of *non-critical* finishing materials. For one manufacturer after another we have developed substitutes that are turning out to be improvements on their old methods. And for others in war production we have developed high-speed formulas that have helped step up deliveries.

And we can give you this on-the-spot technical service almost overnight, for we have complete laboratories strategically placed throughout the nation.

In this day of industrial finishing emergencies, when sudden changes and unforeseen problems arise, wire, write or call Glidden!

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GLIDDEN
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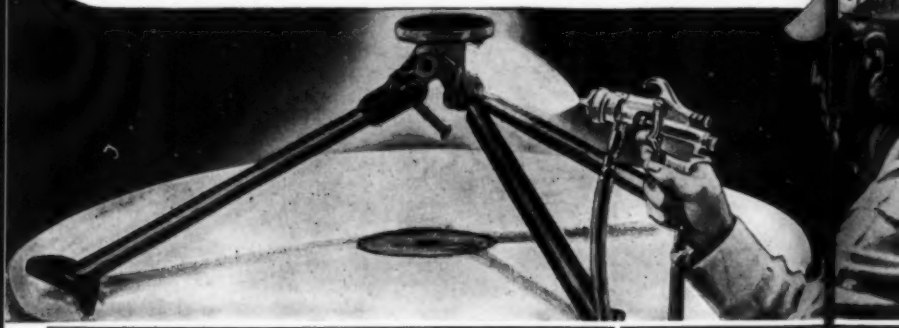
• Speed-up hints on wartime fini

1 WATCH THE SYSTEM OF SPRAY STROKES TO SPEED WAR PRODUCTION

▶ Study every surface or object to determine the correct *starting point* and the most orderly procedure for all subsequent strokes. For example, the inside of legs is usually the best starting point on this tripod for army machine guns. Such an established system is more efficient. It saves time, energy and materials. It gets 'em finished faster.



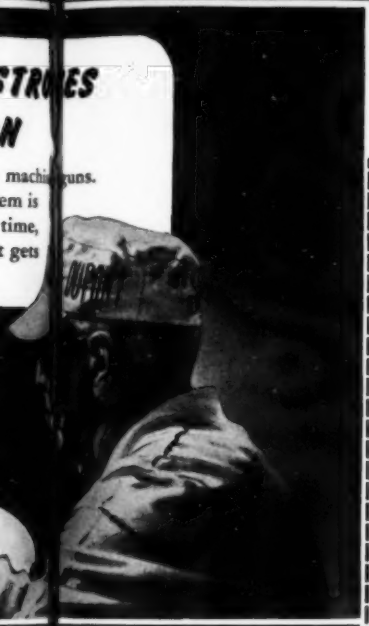
2 A "RHYTHM MAKER" WASTING TIME

▶ A "rhythm maker" looks graceful on the dance floor—but the war plant spray room is no place to "show off." Playfulness slows down production and wastes paint. Better the man who makes haste slowly —following a set procedure of careful strokes.

3 TEACH ONE ANOTHER TO

▶ When one man develops a s tern of strokes for particul let him pass this system on to the once the system is , let every stroke. Stick to a go thing whe

e nishing...*from the Du Pont Man* •



VE ANOTHER TO SPEED THE WORK

e man develops a smooth-working pat-ces for any particular object or surface, this system on to the other fellows. When tem is to let every man use it on *every* to a go thing when you find it. It pays!

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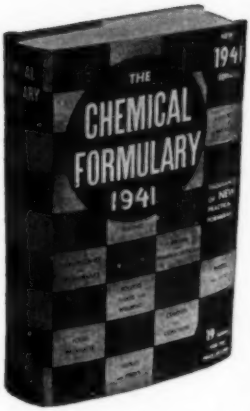

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INDUSTRIAL FINISHING *Magazine*

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We are interested in a fumed oak finish. Will you please give us a personal reply as to how to obtain this finish and whether or not there is a fumed oak stain available?—TYPICAL INQUIRY.

Fumed Oak Finishes

BY F. R. BOYNTON
Foreman Finisher

FUMED OAK, as the name implies, received its name from a fuming process when this finish was first developed. Most factories had airtight chambers into which they placed a quantity of ammonia. The furniture was put into these rooms and left until the fumes had turned the wood to the proper shade of brown. Later, as the finish grew popular, a staining process was developed to produce the same results.

When the fuming process was used so extensively, oak was in its heyday. Clear beautifully-grained virgin oak lumber was quite common. Today many manufacturers are obliged to use more or less second growth oak lumber—a wood with coarse "flaring" grain. But this oak of inferior appearance can be made to look satisfactory with the proper treatment.

Kill Red With Green Stain

The first thing to do is to notice the color of the oak. If it is red, a green stain should be applied to kill the red color. If the wood is not too red it will take on the color of white oak when treated, giving a perfect foundation for the brown stain.

This green stain can be made by adding green aniline powder to water, using anyhere from 5 to 20 grains of aniline powder to the gallon of water, depending upon what strength stain you desire.

After applying the green stain, allow the wood surfaces so treated plenty of time to dry. Sometimes two treatments with green stain are needed to kill the red color. This staining with green can also be used effectively to kill objectionable red streaks in curly or "quilted" maple or walnut.

When treated surfaces have become thoroughly dry they should be sanded to make them smooth.

Most finishing supply houses can furnish stain powders or stains for fumed oak, but for the finishers who are not acquainted with this color, or who for one reason or another are unable to get just what they want promptly, I am fortunate in knowing some procedures that may be of interest and benefit to the enterprising color man.

Tannic Acid Wash First

Most woods contain tannic acid, or tannin, as it is sometimes called. When a wood is deficient in tannic acid, as the young or second growth

oak that is now used extensively, a preliminary wash of tannic acid enables the finisher to make a deeper color or an entirely different tone. Tannic acid is not present in the same quantities in all lumber, therefore a finisher cannot make a uniform color on mixed lumber, that is, lumber that is not matched according to growth and age, unless he first tones the off-color woods.

First, coat the oak with a 5% solution of tannic acid. (This is liquid measure, 5-oz. of tannic acid to 95-oz. of water.) After this is dry, coat the sap wood or light colored places with the solution until the wood is uniform. If a reddish brown color is wanted, add one or more ounces of pyrogallic acid to the solution. Sandpaper the raised wood grain and clean up the wood surface. Follow with a coat of No. 2 solution which is made up as follows:

Bichromate potash	(oz.)	4
Carbonate of potash	(oz.)	1
Water (hot)	(gallon)	1

Brush this solution on while hot

Follow, when the surface is dry, with a coat of sealer; sand the surface; coat with flat varnish or flat lacquer, and wax.

This treatment will fume oak, pine, chestnut, ash, maple or poplar. The colors produced with these acids represent natural chemical changes in the wood and are absolutely permanent in strong light.

For a water stain use:

Bichromate potash	(oz.)	½
Carbonate soda	(oz.)	½
Warm water	(gallon)	1

Brush this solution on freely, let the surface dry, sand thoroughly and follow with:

Acid brown aniline	(drams)	2
Walnut aniline	(oz.)	2
Sulphur brown aniline	(oz.)	1¾
Nigrosine J	(oz.)	1
Yellow aniline	(dram)	1

Mix these powders thoroughly, then weigh 3½-oz. of the mixed powder and stir into one gallon of hot water. Brush on and let dry; sandpaper the surface and seal with sealer colored the same as orange shellac. Finish with flat varnish or flat lacquer. Wax the lacquered surface if desired.

Note: The stain just described is for oak only, though it is fair on ash or chestnut.

If the surfaces are water-sponged before staining, the stain will go on the wet surface more evenly.

The stain consisting of a 5% solution of tannic acid is strictly what is termed a chemical stain. The number of colors obtained with chemicals is limited, but if you can get the color that is wanted, the finish will be excellent. These stains make the most of the natural beauty of the wood. The grain figure is enhanced and the natural shadings are brought into more prominence. Chemical stains are usually considered superior to aniline stains for permanence and transparency. When applying these stains it is essential that the stain is spread on uniformly.

Spray-Painting School Announces Schedule

With many war industries confronted with the need for great corps of spray-painting operators for full-out war production, the DeVilbiss Co., Toledo, Ohio, announces an enlarged and intensified training schedule in the DeVilbiss School of spray-painting. Two-week training courses will be held in Toledo on September 14-28, October 5-19, November 2-16 and November 30-December 14.

The DeVilbiss School, now in its 15th year, is the only one of its kind. It specializes in spray-painting and is open without charge to all who use DeVilbiss spray equipment. The training course covers all phases of spray-painting, with special application to each attendant's particular requirements. Classroom instruction and shop work are conducted by a full-time supervisor and a staff of instructors who are spray-painting specialists.

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Can Adapter for Paint Cup

Due to the shortage in aluminum for paint cups, Binks Mfg. Co., Chicago, Ill., is calling attention to the desirability of using their L-367 Can Adapter, which makes use of the original paint container as the paint cup on the gun. This adapter fits onto the standard cup attachment for spray guns, and will lend itself for use with any standard type paint can.

A limited supply of these adapters is available without any priority rating.

Rubber Substitute

A new substitute for rubber in waterproof fabrics, which meets specifications for natural rubber and can be handled with the same machinery and processes as rubber, has been announced by Joseph L. Haas, technical director and fabric superintendent of the Hodgman Rubber Co., Framingham, Mass.

The new substitute is a plastic already familiar to the automotive and glass industries as the tough, resilient inter-layer in safety glass. It is Monsanto Chemical Co.'s Saflex, one of the group of synthetic resins known as vinyl acetals.

The process for plasticizing and compounding Saflex so that it can equal and even surpass the performance of natural rubber when applied to fabric by conventional "rubberizing" methods was developed by Mr. Haas in conjunction with research chemists of Monsanto's Plastics Division at Springfield, Mass. Both process and materials are available to other manufacturers, thus enabling the development to serve the war effort as widely as possible.

Saflex-coated fabric, which the Hodgman company has christened Horco-X, has already been made into Army raincoats, hospital sheeting, gas protective fabric, life-preserver jackets and water bags, while many other military items are awaiting final action or are still in the experimental manufacturing stage.

Saflex is so much like rubber in its reaction to plasticizing, compounding and cure that it may have far-reaching possibilities as a rubber replacement beyond the coating field. Included in such possibilities are extruded tubing and many molded articles now made from rubber.

New . . .

MATERIALS SUPPLIES EQUIPMENT

O. D. War Paint

Contractors and sub-contractors will be interested in the new government-approved olive drab which has been added to the Carbozite line of colors for Carbozite standard coatings, Carbozite shop coating, and Carbozite textile coating.

Carbozite standard coating — used for protecting roofing, siding, piping, machinery and all exposed steel work —resists the corrosion of acid, alkali,

Lubrisol Pad-O-Paque Process

REPAIRS - REFINISHES DAMAGED SURFACES

The most difficult job in finishing is repairing damaged surfaces, particularly some of the newer type finishes. After years of research and experiments the

LUBRISOL PAD-O-PAQUE PROCESS

was developed to repair quickly and easily all types of finished surfaces on wood or metal products.

No specialized knowledge or experience is required to use this process. It is now being used successfully by hundreds of finishers and refinishers throughout the country.

The regular PAD-O-PAQUE part of the process consists of sixteen different shades of Prima Vera, Walnut, Maple, Mahogany and Blonde, also Black and White, from which any modern finish may be matched.

The colored PAD-O-PAQUE part of the process is for all kinds of finishes on metal products and consists of Black, White and light medium and dark Yellow, Red, Orange, Blue and Green for matching any finish.

LUBRISOL is a quick-drying finish applied by padding on with a cloth after the PAD-O-PAQUE has matched the shade or color of the damaged surface and after shellac stick "burn-in" repairs. It is supplied in high gloss, satin or flat. It quickly pads out "burn-ins," PAD-O-PAQUE repairs, press marks or crazes with little effort. LUBRISOLVENT may be used to reduce viscosity of LUBRISOL to suit any repair job.

Write for folder containing complete description of the nationally famous LUBRISOL PAD-O-PAQUE PROCESS.

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moisture, sulphur water, salt air or water, smoke, etc. It is available in Carbozite black, red oxide, green, non-corrosive light and dark gray, and the new government-approved olive drab, in consistencies for brushing, spraying, or dipping.

Carbozite shop coating, for shop prime-coats or product protection during shipping or storage, is a quick-drying coating that can be sprayed, brushed, or dipped, and will protect steel, non-ferrous metals, etc., from moisture, fumes, salt air or salt water for long periods of exposure. It is being extensively used as a primer for structural steel in the shop and for protection of bright products being shipped in open cars or overseas.

Carbozite's newest product, Carbozite textile coating, is useful for waterproofing fabrics, tarpaulins, etc. The new olive drab color in this product will be of special interest for contractors on war production where fabric is involved. Other Carbozite products include high-temperature stack coating, acid-resistant mastic, marine coatings, and blackout black.

Further details on these Carbozite products and the new approved olive drab coatings may be obtained by writing to the Carbozite Corp., First National Bank Building, Pittsburgh, Penna.

Removes Rust and Scale

The International Rustproof Corp., 12507 Plover Ave., Cleveland, Ohio, through its many years of research and experimentation in the rust-prevention field, has developed many products that have materially aided in stopping the scourge of corrosion which is responsible for millions of dollars worth of damage to ferrous metals.

Corrosol No. 26 is a specific solution for a specific problem. The pickling and cleaning room has presented the tool and other ferrous industries with problems that demand a more positive corrosion and blemish-proof method.

Ordinary methods used for cleaning steel tools are at present not the most effective that can be used, because they do not rustproof the metal after it has been treated. As a mattter of fact, while ordinary pickling cleans the metal, it does not prevent rust growth, but instead has a tendency to accelerate corrosion. Corrosol No. 26, however, does not promote the growth of corrosion after treatment. Instead it leaves the metal in a clean, passive condition. Furthermore, because this solution does not act upon the metal itself, it does not dull the cutting edge of tools as ordinary pickling baths do. It not only removes rust, but also eliminates blemishes, burns, marks, etc.

Corrosol No. 26 is a simple product to use. It is used in a cold solution. It is inexpensive and does not interfere with your present production problems. It is harmless to the workmen and is non-inflammable.

DeVilbiss Flow Gun

A new, improved flow gun, Type SFG, that will help aircraft and other war industries speed operations is announced by The DeVilbiss Co., Toledo, Ohio. It is designed for caulking, cementing and other flowing operations

Nozzles for all materials are available.

where plastic materials such as crack fillers, sealing compounds and heavy paints are used. This new DeVilbiss flow gun is particularly useful in doping and cementing fabric parts of aircraft, and for a wide variety of similar production jobs.

The chief merits of this gun are little restriction to flow of material and great ease of handling. Small, lightweight, well-balanced, it fits the hand comfortably and is easily operated.

Material is fed to the gun under

WAR PAINT COLORS

MORE and more approved war-paints must meet specifications pertaining to infra-red reflectance. The most modern method for obtaining this data is by means of the Hunter Multipurpose Reflectometer, illustrated above. Properly adapted, this machine will give accurate reflectances, ranging from infra-red to near ultra-violet.

The Hunter Multipurpose Reflectometer has been standard equipment in the Vedoc Laboratories for several years. We find that in the development and control of Vedoc War Paints, modern laboratory equipment assures finishes that will not only meet high standards but also fit production requirements closely. May we tell you more about Vedoc War Paints for war products of all types?

War Paint Specifications Folder Upon Request

Vedoc

LIQUID PLASTICS DIVISION
FERRO ENAMEL CORPORATION
CLEVELAND, OHIO

ON THE *Warpath!*

Official U. S. Signal Corps Photo

DeVilbiss Equipment helps hides of construction mac

● Plowing through miles of forests, swamps and rockbeds in all kinds of weather, thousands of steam shovels, bulldozers and road building machines are blazing military trails to speed war materiel to our far-flung bases.

These road builders—and their first cousins working on army camps, air fields,

power
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DeVilbi
parts a

Right n
full-out
equipm
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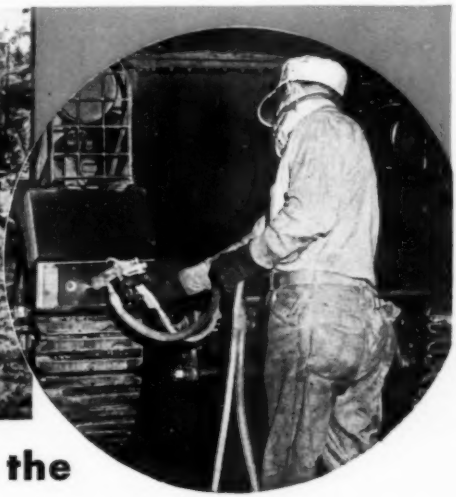
nearby

THE



...elps toughen the ...machines for war service!

power dams and other war projects—must be brutes for punishment. And DeVilbiss has helped to toughen their hides for these bruising jobs. Leading producers of construction equipment use DeVilbiss Spray Equipment to speed the painting of working parts and complete machines.

Right now, our job is to keep finishing operations in step with full-out war production—with speed to spare. We have just the equipment you need to get product finishing moving faster—to speed plant camouflage, blackout and maintenance painting. Your nearby DeVilbiss man will gladly show you.

THE DEVILBISS COMPANY • TOLEDO, OHIO

Canadian Plant: WINDSOR, ONTARIO

DEVILBISS

SPRAY SYSTEMS

Looking through both Spray Booth and Drying Oven for a distance of over 200 feet—Spray Booth is 96 feet long—Drying Oven 120 feet in length. Down-draft feature of Spray Booth furnishes abundance of fresh air to operators working above and at floor level, while operators in pits are supplied with washed and filtered air by a special Mahon Air Supply System. Hydro-Filter System exhausts all fumes and overspray and assures complete fire safety.

Far-seeing executives are installing Mahon *Finishing* Equipment for present-day needs—*but with a shrewd eye to the future.* This recently installed Mahon Down-Draft, Hydro-Filter Spray Booth in combination with a modern Mahon Drying Oven is at present assigned to the production of war materials. It is specifically designed, however, for the finishing of the purchaser's standard product, immediately war production ceases. The entire installation is modern-to-the-minute—straight line routing of work through both Spray Booth and Drying Oven—and is equipped with Mahon control and safety features which make for fast, efficient, economical operation. Let Mahon *Finishing* engineers look over YOUR plant—plan finishing equipment to speed up your present production—AND SAVE YOU MONEY—TOMORROW.

(1) Entrance to Spray Booth
(2) Entrance to Drying Oven
(3) Side view of Spray Booth, showing rear of Hydro-Filter Exhaust Units.
(4) Side view of Drying Oven, showing heating equipment and combination Air Seal and Exhaust

THE R. C. MAHON COMPANY • DETROIT • CHICAGO

Manufacturers of Metal Cleaning Machines, Rust Proofing Machines, Welding Fixtures, Spray Booths, Ovens, of All Types, Filters, All Supply Units, Hydro-Down Dust Collectors and Many Other Units of Special Production Equipment—including Complete Finishing Systems.

MAHON

pressure and is extruded into cracks, grooves, and over seams that are to be sealed. The volume of flow can be controlled either by regulation of the pressure or by a simple knurled nut adjustment of the fluid needle.

Seal Lac Offered

Longman & Martinez (Paint Makers Since 1852), 46 Roebling St., Brooklyn, N. Y., announces a new product called "Seal Lac" (5-lb. cut) made to replace white shellac, which comes from India and will soon be as hard to get as rubber.

According to the company's literature, Seal Lac dries in three hours. Two coats can be applied in one working day. It is an excellent finish for floors of all kinds, wood trim, furniture, etc. It is absolutely waterproof and will not scratch white. It is far more durable than real shellac. Seal Lac can be used for sealing and sizing porous surfaces.

Seal Lac can be thinned the same as 5-lb. cut shellac. Thinners used are benzine, mineral spirits, or turpentine. Benzine gives the quickest drying. On new work, thin the first coat with 40% thinners. On second coat, thin with 20% thinners. This material is a quality product and not to be confused with cheap rosin substitutes which were so common at one time.

Drum Tumbler

A motor-driven ball-bearing machine designed to make a churn out of any drum, barrel or small tank for mixing, agitating or blending the contents is announced by The Vol-U-Meter Co., 75 Wilbury Place, Buffalo, N. Y. The change drum feature avoids cleaning delays inherent in the old type barrel tumbler, as well as eliminating any possibility of contaminating different products.

Well braced end supports of heavy boiler plate are properly spaced with angle iron and the complete assembly is welded throughout to form a rigid unit sufficiently heavy to absorb the shock of large reciprocating loads. Power is supplied from a ¾-hp. back-geared motor connected to the drive shaft with a triple V belt.

A detachable crank on the end of motor shaft makes it possible to turn the yoke to proper angle for drum transfer. During processing of material, power can be cut off and the drum turned to horizontal position for sampling its contents, adding additional material, or for draining.

A handy inclined portable ramp makes the placing of drums a matter of seconds.

New Production Airbrush

The Paasche Airbrush Co., 1923 Diversey Parkway, Chicago, Ill., has brought out a new Type CUB airbrush which has a number of improved features. It provides a rapid means of applying all synthetic enamels, airplane dope, lacquer, oil paint, varnish, glaze and other materials. Multipleheads are interchangeable for use with any material.

Quoting from company literature on this new airbrush:

With correct multiplehead, it atomizes perfectly all types and kinds of

Standard pipe thread air inlet is ¼-in.; fluid inlet is ⅜-in.; net weight, 22-oz.

finishing and painting materials at high speed and under perfect control . . . can be used with pressure tank, overhead container, gravity or syphon cup. It is ruggedly constructed to stand up under hard usage. Maintenance cost is low because all working parts are fully enclosed, thus protecting them against damage and subsequent replacements.

Used with pressure feed tank with airline pressure of 80-lbs., it produces a perfect spray pattern up to 16-in. wide, at a distance of approximately 8-in. from the surface being coated. With syphon or gravity cup, a perfect pattern up to 10-in. wide is obtained at a distance of 8-in. Other features include:

1) Micrometer-calibrated control of spray pattern assures finest adjustment from smallest round to widest fan spray pattern.

2) Large aircap is easily removable and interchangeable. New type fan ports insure perfect spray pattern.

3) Short fluid passage with slanting fluid inlet speeds material flow and increases coating speed.

4) Self-centering stainless steel needle is short, sturdy and wear resistant.

5) Easy-grip handle is molded to fit the hand; will not chafe or cause "hand-grip" fatigue.

6) Larger trigger with light quick-responsive action prevents finger fatigue.

7) Fluid assembly and multiplehead are machined from solid brass stock.

Noroy Synthetic Lacquer

The Rudd Lacquer Corp., of Rahway, N. J., announces that its new Noroy Synthetic Lacquer has been developed and formulated for manufacturers who are restricted on limitation order No. L-81, prohibiting the use of nitrocellulose lacquer finishes. The company also states that Noroy Synthetic Clear Lacquer produces a high gloss finish on wood. It can be sprayed, tumbled or dipped and dries fast, leaving a smooth hard finish completely free of pinholes or orange peel. This lacquer is high gloss but can also be made to produce a satin finish.

Luminous Exit Signs

Exit signs painted with luminous paint are announced by Technicraft Co., Inc., 121 E. 24th St., New York, N. Y. These signs will glow in complete darkness for more than six hours. The luminous pigment in the paint is re-energized by exposure to daylight or clear electric lights.

Protective Coatings for War and Civilian Uses

(Continued from page 13)

use of wood-synthetic resin combinations has increased tremendously.

Plastic-bonded plywood and plastic-bonded laminated wood, as they imply, are plywood structures bonded or laminated with synthetic-resin adhesives. The grains of plywood layers are crossed in the plastic-bonded plywood, while the grains of the laminated layers are parallel.

In aircraft construction, the plastic-bonded plywood structure reduces air resistance because the smooth hard surface does not require rivets and the surface does not ripple. Plywood aircraft can be constructed relatively cheap and in a matter of hours, as compared with metal planes, which requires several days. Plastic-bonded plywood gliders and training planes are conceivable.

Compregnated wood (the wood layers are impregnated with synthetic-resin plastics, then compressed in a hot press under pressures up to 1,500-lbs. per square inch). This is a late development in which the surface hardness is said to be up to 90% of that of plate glass. May be used for gears, gunstocks, furniture, metal parts, aircraft wing coverings, aircraft propellers.

Now we're ready with the answers to your conversion problems

Here is Answer No. 3

We knew that conservation of critical materials would bring in its train a multitude of finishing problems. So we put our laboratories to work and the result is a complete line of finishes which, although using no critical materials, meet practically every problem of conversion from Tin or Terne Plate to Black Plate.

PRO-LAC

Pro-Lac is a highly efficient processing gold lacquer developed to withstand a temperature of 250° F., for approximately one hour. Applied by roller coating at a film thickness of 9 mm., Pfund Gauge, it bakes in 17 minutes at 375° F. Pro-Lac is an all-round excellent sanitary gold lacquer and is especially recommended for black plate where high resistance is required. It can also be used on Tin Plate with equally good results. It contains no critical materials.

Write today for complete information and samples.

THE WATSON-STANDARD CO.
Manufacturers of
PAINTS . . . VARNISHES . . . INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

TOUGH JOB HEADQUARTERS
℞ Prescription Finishes
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

FACTORY AND GENERAL OFFICES: PITTSBURGH, PA.
WAREHOUSES: BOSTON · BUFFALO · DETROIT · NEW YORK

Spray Booth Trouble

For some time we have been subscribers to your magazine and well knowing your co-operation in solving the problems of finishers, we have not hesitated in bothering you with ours.

From time to time we have been receiving complaints from our gun-sprayers, claiming different troubles caused to them by gases produced by the materials at the time of spraying, although we have done our very best to have properly installed booths. Our booths are conveniently equipped with air exhausters and we have done all possible to convince the people of the need of using the masks which are supplied to them, but our efforts in this connection have been useless. We also give them milk to drink with the idea of neutralizing, as much as possible, the effects of fumes.

Although we have taken whatever measures were advisable to have our people properly fitted for the job, we wish to find out if you have heard from other sources having such difficulties and what steps were taken to do away with same.

We also should like to know positively how dangerous these fumes might be to the men doing this kind of work.—*S. V., Production Manager, Corporation De Radio De Chile, S. A.*

We are surprised that your spray operators complain about the fumes —that it, if you have properly ventilated spray booths. We could probably give you more accurate recommendations on this if you would send us a drawing of your spray booth, showing dimensions of same, where the exhaust fans are, what size they are, and at what speed they rotate. Also, please indicate where the exhaust goes when it leaves the back of the booth, and approximately the length and diameter of the exhaust pipes.

Here in this country we have some paint rooms and finishing rooms that are not very well equipped for exhausting wasted spray and fumes, but the spray operators go ahead with their work and seem to suffer no ill effects other than the time it takes to wash the paint off their hands, arms and faces. Where conditions are pretty bad, the operators generally wear respirators (masks).

Of course, in our well equipped spray rooms, where we have the latest water-wash spray booths, there is no difficulty whatever with overspray or fumes reaching the workmen's faces — that is, when they spray properly.

Possibly your spray guns need adjustment or you may be using excessive or insufficient air pressure in your spray.

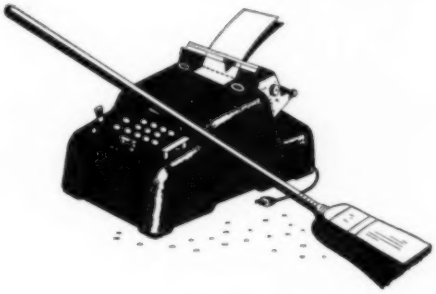
We are referring copies of your letter to some of our spray equipment manufacturers and it is possible that they may have some additional suggestions or information to offer.—ED.

In reading your letter we are of the opinion that the exhaust

Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

BUSINESS MACHINES AND BROOMSTICKS



Metal or wood. Baked or dipped. There's a Nason finish designed for every surface and finishing schedule.

Every product is a challenge to the Nason staff of laboratory technicians. A challenge that is answered by research and analysis.

The surface and finishing schedule of both business machines and broomsticks, as well as the thousands of other products that may pass through *your* plant, have been thoroughly analyzed by our chemists.

What may present a *new* finishing problem to you may be an old and tested method to us. We wait ready to be of service.

R. N. NASON & CO.
manufacturers
PAINTS • VARNISHES • LACQUERS

NASON *fine finishes*

151 POTRERO AVENUE, SAN FRANCISCO • 2201 BARRANCA STREET, LOS ANGELES

units on your booth are not large enough to pull a sufficient volume of air across the face of the booth to insure the paint fumes being pulled away from the operator.

The exhaust unit should be of sufficient size to pull a minimum of 100 lineal feet across the face of the booth. Some of our states demand 125 lineal feet per minute and others demand 150 lineal feet per minute to insure adequate booth ventilation.

In figuring the lineal feet across the face, you would multiply the height times the width times 100, or by 125 or 150, depending upon the amount of air required to keep the booth clean.

To determine the correct size of exhaust motor and fan, we will give you the following example:

On a 6-ft. booth; 6-ft.x6ft.x7ft. (that is, 6-ft. wide, 6-ft. deep and 7-ft. high) you would require a minimum ½-hp. motor with an 18-in. 6-blade fan, and a fan speed of 1,900-rpm. This would give free delivery of 4,200-cu.ft. of air per minute. Against ¼-in. static pressure, this exhaust would deliver 3,550-cu.ft. of air per minute.

The ¼-in. static pressure is the usual resistance in a booth having not more than a 10-ft. exhaust pipe, with one elbow.

These specifications would provide that the exhaust unit be located either at the top back or at the exact back of the booth, so that there would be a pull across the face of the booth, drawing the fumes away from the operator.

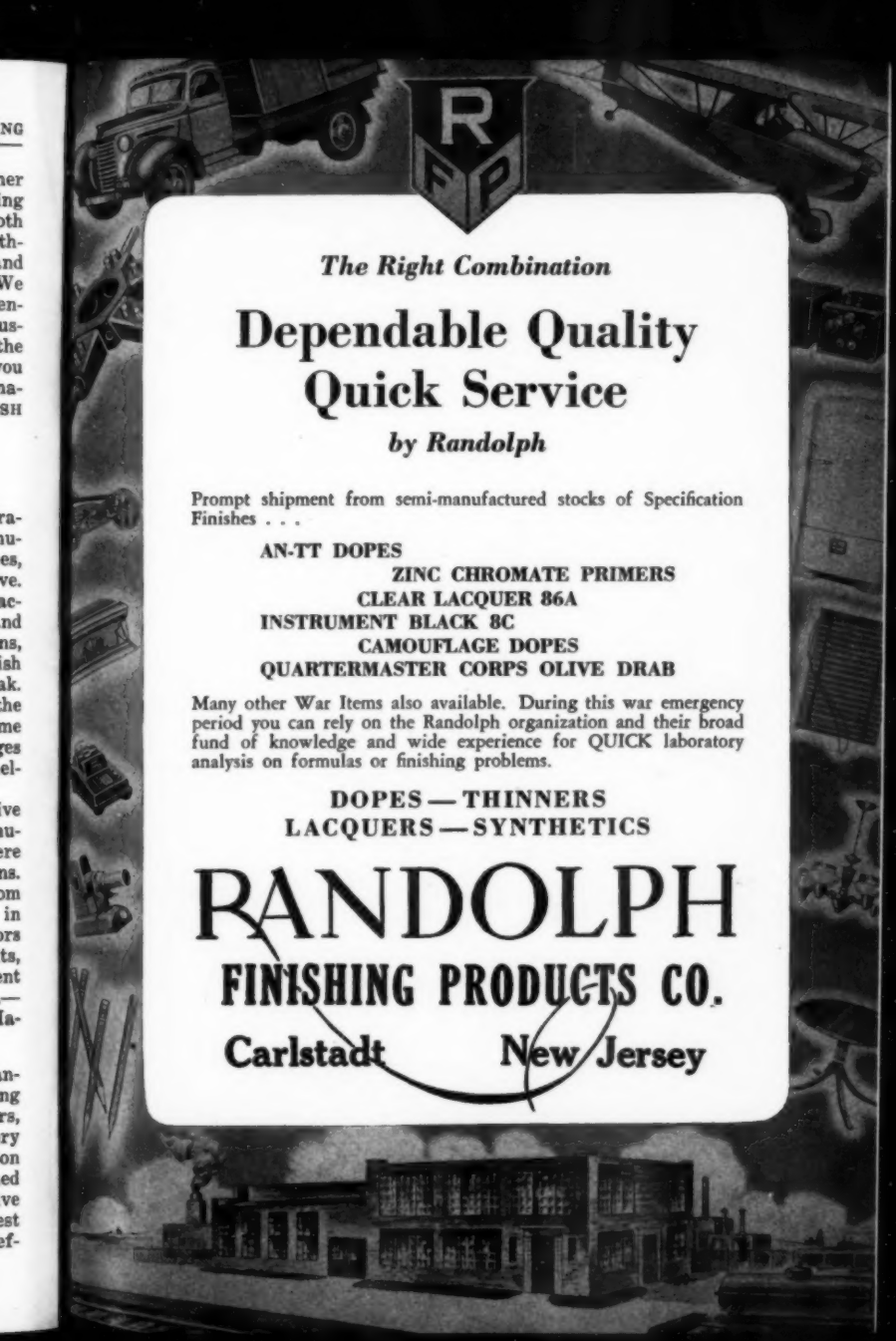
It is also well to remember, in spraying, that if you have an 18-in. exhaust pipe, then exactly one-half of that, or 9-in. away from the front of the booth would be the maximum you could expect for the air to be pulled through and out, and this leads us to wonder whether your spray operators are standing flush with the front of the booth and spraying inside of it, or whether they are standing outside and allowing the fumes to escape. We are attaching a page from our general catalog which gives an illustration of men spraying inside the booth, with the thought that you may glean some valuable information from this.—PAASCHE AIRBRUSH CO.

Chair Finishes

We are sending you an illustration of one of the chairs we manufacture. We have some other types, something a little more expensive. We are the largest chair manufacturers in this country (Mexico) and supply our chairs to beer gardens, restaurants, clubs, etc. We finish them in walnut and light oak. Some people, naturally, want the chairs finished in enamel, but some others find the enameling charges expensive and we find the enameling troublesome.

We would like for you to give us the names of firms who manufacture stains. We know that there are some novelty finishing stains. Our chairs are manufactured from hard elm, and we are interested in stains that give us novelty colors or colors proper for restaurants, as we want something different than the walnut and oak stains.—Cia. Mfra. De Muebles "La Malinche."

In view of the fact that we manufacture complete lines of finishing materials, including stains, fillers, lacquers, sealers, etc., it is very likely that we will be in a position to serve you and submit finished panels showing new and attractive finishes. We would like to suggest that in order to produce these ef-



The Right Combination

Dependable Quality Quick Service

by Randolph

Prompt shipment from semi-manufactured stocks of Specification Finishes . . .

AN-TT DOPES
ZINC CHROMATE PRIMERS
CLEAR LACQUER 86A
INSTRUMENT BLACK 8C
CAMOUFLAGE DOPES
QUARTERMASTER CORPS OLIVE DRAB

Many other War Items also available. During this war emergency period you can rely on the Randolph organization and their broad fund of knowledge and wide experience for QUICK laboratory analysis on formulas or finishing problems.

DOPES — THINNERS
LACQUERS — SYNTHETICS

RANDOLPH

FINISHING PRODUCTS CO.

Carlstadt New Jersey

fects on your own wood, you send us approximately one-half dozen of your small elm panels in the white, and we will apply such special finishes as we think would be of interest and return them to you.

You might, with your reply, give us some idea of the approximate types of finishes which would have your interest, and we will then finish the panels and return them to you promptly.—V. J. DOLAN & CO., INC.

French Polishing

In a recent issue of INDUSTRIAL FINISHING, a Question and Answer was published in regard to French Polishing furniture on a government contract. Although this subject was quite well covered in the answer, I would like to add a little more to the information given. The way this question reads there seems to be some shortcomings. Either the one who wrote these specifications didn't know the real meaning of "French Polish," or there would be a catch for the contractor who takes this job and follows the specifications as they are quoted in the question. Two paddings or coats, as it says, would not be any more than a mere washcoat or merely a bare wood. Ash is a very opened-grained wood and would need filling. French polish, although a very fine finish, requires days to get the smooth, glass-like finish. It would seem to me that it would be out of place today as to cost.

I was once with a firm where all of our fine work was done this way. We had a method of our own where we did away with the circular and figure eight movement of padding. After our wood was prepared we gave it a brush coat with a very fine-hair brush. Any ordinary brush will not do. We then padded with the grain and after two or three paddings and sandings, we brush coated again and then padded again until we had depth of finish.

However, this takes days of time, as only a limited amount of shellac can be padded on at a time. It would seem dry on the surface but would print easily.

We made our pads of cotton and shaped them to a ball of convenient size and enclosed same within a lintless cloth. After the desired finish had been built up, the work was padded off in clear alcohol, dried and dulled off with a polishing brush, using oil and pumice, and then cleaner.—J. K. COOPER.

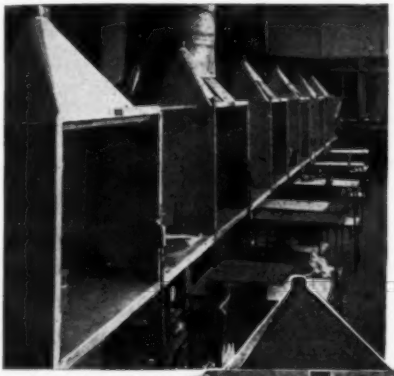
In your issue of INDUSTRIAL FINISHING for July, 1942, you have an article on French Polishing.

Having been in England after the first World War, endeavoring to introduce American methods of finishing, I was able to observe the French Polishing method to some extent and from those observations might offer a few suggestions.

The inquiring concern mentions hickory and ash to be French Polished. In the first place it would take a lot of hard work to fill up the pores of hickory or ash. Therefore, I would suggest taking an ordinary water-soluble crack filler and mix to a paste with a waterproof varnish instead of water. Then glaze with the mixture to fill the pores. Next, apply a thin coat of shellac and sand smooth with a fine abrasive paper (5/0 or finer).

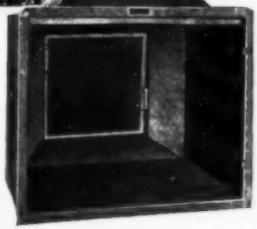
You are then ready to French Polish. The procedure is similar to that described, only do not put the oil in the shellac. Make a pad, convenient to handle and suitable to the work in hand, of some soft padding such as absorbent cotton, cover same with a piece of old linen, dip in shellac (about 3-lbs. to

POSITIVE PROTECTION AGAINST SPOILAGE, REJECTS AND DO-OVERS



SINUOUS SPRAY BOOTH FILTER

Consists of cell and frame permanently fastened to sheet metal partition at back of booth. Cells are held in place by spring latches. Each cell has a capacity of 1500 c.f.m. Bulletin No. 224.



AIRMAT DRY FILTER

For use in smaller drying rooms where drying time can be materially lessened by bringing filtered warm air in contact with finished surfaces and exhausting the fume laden air. Bulletin No. 230B.

Not only are worthwhile initial savings made possible by the installation of AAF Sinuous Spray Booth Filters but serious and troublesome maintenance problems are also eliminated.

American Spray booth and drying room filters will speed up production schedules for you and cut down on spoilage and do-overs thus saving both time and money.

Bulletins describing the complete line of American Air Filter equipment are available without obligation. Please write us.

AMERICAN AUTOMATIC FILTER

For large drying room ventilation to protect finish and accelerate drying. Bulletin 240C.

AMERICAN AIR FILTERS FOR PROTECTING PRODUCT FINISHING

AMERICAN AIR FILTER COMPANY, INC., 102 CENTRAL AVE, LOUISVILLE, KY.

IN CANADA: DARLING BROTHERS, LIMITED, MONTREAL, P. Q.

the gallon). When the pad has absorbed plenty of shellac, dip a couple of fingers in the oil and apply to the wet surface of the pad as the oil is used only as a lubricant to keep the shellac from sticking.

From here on it is the operator's job and like everything else practice makes perfect.—A. C. BOOTH.

Paints Settle in Our Circulating System

Do you know of any quick test to determine whether or not a paint or enamel will work satisfactorily in a paint-circulating system without actually trying it? We are interested in the circulating system of paint delivery in our factory and at the present time are using a number of specification paints, from different sources, which settle out. This settling varies from a hard dry cake to a soft mushy mass, over a period of 24 to 48 hours.—S. V. Co.

With changes in coating materials since December 7, 1941, there have been many necessary alterations in spray equipment and circulating systems. Your question concerns circulating materials that have a tendency to settle out when not in agitation, or materials composed of ingredients that seem to have an attractive affinity, causing soft mushy masses to collect and resulting in some trouble when not in agitation.

There are two kinds of circulating systems in general. The most commonly known is the "loop." The lesser known system is referred to as a high-pressure feed, low-pressure return.

In the loop system, trouble will be encountered with the type of material mentioned in your question. From the take-off at the regulator to the spray gun, the material is out of agitation and here is where settling takes place due to the very slow movement of material through the hose.

In the high-pressure feed low-pressure return system, every ounce of material in the entire system is in constant motion or agitation. This system was developed to help maintain accurate "color control" in the larger automotive plants, but today it has advantages in handling the lusterless finishes.

The pump used for normal paints has little or no place in a system pumping lusterless materials, as these materials are altogether too abrasive and the pump would last only a short time. The pump should be one capable of handling these abrasive materials without seriously wearing out important or costly parts. The pump should be easily and quickly repairable.

Such coating materials as zinc chromate primer, oxide primer, undercoats, silica, and new paints containing inert materials, can be readily circulated to good advantage without too much maintenance or shut-down time.

The most satisfactory way to get the proper information on circulating systems is to call in spray-equipment factory representatives who will get all the facts relating to your problem and give you the proper recommendations.—WILLIAM WILSON.

Advance S. & C. Announces New Orleans Representative

The Advance Solvents & Chemical Corp., 245 Fifth Ave., New York, N. Y., announces the appointment of the L. B. Griffith Co. of New Orleans, La., as its representative on Soligen Driers, Modified Driers and Advasol Driers in the states of Louisiana, Mississippi and the southern half of Alabama.

GOVERNMENT SPECIFICATION DATA

RELEASED BY

BERRY BROTHERS, INC. *INDUSTRIAL DEPARTMENT*

DETROIT · MICHIGAN

JERSEY CITY · BOSTON · CINCINNATI · CHICAGO · ST. LOUIS

Now Available

DETAILED SPEC. INFORMATION ON FOLLOWING GOVT. FINISHING MATERIALS

If you are working on, or bidding on war contracts, calling for any of the following finishing materials, and want detailed spec. information for your production department, write for bulletin needed.

Spec. 3-165A (Army Metal Primer)
Spec. 3-150 (Army Lacquer Enamel)
Spec. 3-67C (Army Ammunition Paint)
Spec. 3-162A (Army Lacquer Enamel)
Spec. 51-70-1 (Army Fire Control Instrument Paint)
Spec. 52-O-2B (Army Locker and Packing Box Paint)
Spec. 60-O-1A (Army Ordnance Materials)
Spec. 51-O-3B (Army Recoil Mechanism Materials)
Spec. 51-2A (Army Artillery Materials)
Spec. 51-1B (Army Artillery Materials)
Spec. T-1093D; T-1224; T-1227; T-1215 (Army Camouflage Paint)
Spec. ES-349 (Quartermaster Olive Drab Lacquer)
Spec. ES-347 (Quartermaster Surfacer)
Spec. TT-V-51 (Federal Asphalt Varnish)
Spec. TT-V-121A (Federal Spar Varnish)
Spec. TT-V-81A (Federal Aluminum Mixing Varnish)
Spec. TT-P-81 (Federal Olive Drab Paint)
Spec. FXS-339 (Frankford Ammunition Paint)
Spec. FXS-459 (Frankford Cartridge Case Varnish)
Spec. PXS-783 (Picatinny Zinc Chromate Primer)
Spec. PXS-979 (Picatinny Ammunition Lacquer Enamel)
Spec. JQD-56 (Jeffersonville Olive Drab Tent Paint)
Spec. CQMD-5 (Chicago Metal Bed Enamel)
Spec. 196-131-59 (Chemical Warfare Lacquer and Baking Enamel)
Spec. 52-V-15D (Navy Aluminum Mixing Varnish)

Copies of bulletins needed will be mailed promptly on request.

BERRY BROTHERS

Industrial Varnishes · Enamels · Lacquers

DETROIT, MICHIGAN · WALKERVILLE, ONTARIO

JERSEY CITY · BOSTON · CINCINNATI · CHICAGO · ST. LOUIS

Baffle Plates in Spray Booths

At present we are using a paint spray booth 8½-ft. wide, 6½-ft. high and 7-ft. deep. We have heard quite a bit about baffle plates being placed in front of the fan to prevent a great deal of the paint from getting into the fan and clogging the stack. We would appreciate information from you as to the proper type of installation of these baffle plates, in relation to the number to be used, and the spaces to be left at the top, bottom and between the sections.—S. Engineering Co.

Baffles or distributing plates are an essential part of every efficient spray booth. The booth is not complete without some means of creating an even flow of air through it on its way out the exhaust duct. If your booth was installed without proper distributing plates you have not had efficient exhaust.—THE DEVILBISS CO.

The use of baffle plates does prevent spray from depositing on fan and in exhaust stack, although it does not entirely eliminate this. Another function of baffle plates is to properly distribute the air in a booth to assure most efficient ventilation. We are sending you two sheets, one showing a photograph of a paint spray booth with the baffle plates in position, the other is a drawing indicating how baffle plates are held in position and how they are placed in relation to exhaust units.

You will note that brass hooks and brass studs are used to obviate any possibility of arc when plates are being removed from booth.

Even with baffle plates however, dry-type booths require regular cleaning. Our water-wash booth practically eliminates this manual cleaning and affords a greater degree of safety and economy. A news item about Paasche water wash booths appeared in Industrial Finishing Magazine in the July issue, and if there is any more information you desire along these lines, we will be glad to send it to you.—PAASCHE AIRBRUSH CO.

We are pleased to send you our complete industrial catalog No. 80, and to point out to you our standard distributing plate arrangement for spray booths, as shown on our catalog sheet No. 54. We are also pleased to refer you to the water-wash type spray booths, as shown on pages 58 to 61 inclusive. We highly recommend these as the solution to good housekeeping problems. We are taking the liberty of asking our representative in your territory to call on you the next time he is in your vicinity.—BINKS MFG. CO.

Interchemical Strips for Action

There is a crying need for Speed in war production. Not only speed of production—but speed in locating companies who can manufacture necessary items. To facilitate this, Interchemical has organized the technical and sales staffs of all of its divisions and subsidiaries in a co-ordinated effort to make its varied and comprehensive equipment available for war work.

Each division was requested to analyze and report on its production facilities and to list the war products it was making. These facts from each subsidiary were compiled, edited and published in a "Manual of Products."

A series of sales organization meetings was held in the major territories, at which, for the first time, salesmen from all of Interchemical's divisions and subsidiaries sat down to plan together for an all-out war-business.

The products of Interchemical, its divisions and subsidiary companies constitute a great volume of production in the protective and decorative chemical coating industry.

Use These Industrial Finishes

For Civilian Products: Finishing materials equal to or superior to those formerly available. Materials that lend themselves to attractive finishing schemes and also possess good protective qualities.

For War Products: Finishing materials that meet U. S. Government specifications and stand up under rigorous conditions. If you are in war work and have a protective coating problem, send us your specifications and requirements.

Inquiries for information or bids will receive our prompt attention.

NO TAMPERING WITH QUALITY

ROCKFORD VARNISH COMPANY

Manufacturers of Protective and Decorative Coatings

ROCKFORD, ILLINOIS

To Save Paint Brushes

BECAUSE of the shortage of bristles, The Osborn Mfg. Co. of Cleveland offers the following suggestions for conserving brushes.

When not in use, brushes should be kept suspended in a solution of turpentine and linseed oil, or any other vegetable oil specially prepared for that purpose.

Paint or any other vehicle in which brushes are used should not be permitted to harden in the bristle, since this makes cleaning more difficult. Accumulation of any paint vehicle in the heel of the brush should be prevented.

Never immerse a brush in water, especially those brushes that are made with 45% hair. If it is cleaned in turpentine or lacquer thinner and then washed in soap and water, all the soap should be rinsed out, the bristle combed straight, and the brush wrapped in a paper or a cloth and thoroughly dried before being used again.

Because oil and water do not mix, a brush washed in water and used again before it has dried thoroughly will be spoiled when dipped in paint, varnish or a paint vehicle. Furthermore, brushes should not be cleaned in kerosene.

Use of the right type of brush for the specific job is important. Do not abuse the pure-bristle brushes now in use, because brushes that are made under new government regulations are not as efficient as those made entirely of bristles. If properly used, all brushes will last longer.

If you have some old pure-bristle brushes that are badly worn but could be cleaned and used, we suggest that you use them, for they still may be more effective than the new mixed hair and bristle brushes.

Reclaiming Waste Lacquer

NOW THAT there is a shortage of raw materials, one of the most important things at this time is lacquer reclaiming. The majority of finishers use, in their water-wash booths, a strong alkali solution which destroys certain colors in the sludge.

I have found that it is not necessary to use anything in the water-wash booth when using lacquer, except a very small amount of sodium bichromate to overcome any acids which, when mixed with aerated water, will rust water pipes and booths.

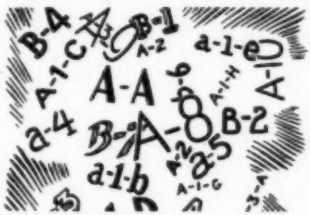
I allow the sludge to stand covered for a few days before drying, to be sure that the sludge is thoroughly saturated. If some of the sludge is fresh, it is a little gummy when dried and will slow down the handling time.

The sludge is dried in about 20 or 30 minutes, in a centerfuge which leaves about 15% moisture still in the powder. This moisture is supposed to do a great deal of harm; I have found this to be pure popycock. The reason I will explain later.

The easiest method to break up dried sludge into powdered form is to throw lumps into a cheap grain grinder, which can be bought from any mail-order house for about $10.00 or $11.00.

Enough powder is then added to 35 gallons of fast-drying thinner to make about 55 gallons, which is agitated with a small double-propeller air agitator for about 40 minutes. The viscosity should be about 55 seconds in a No. 2 Zahn viscosity cup. If the material needs thinning or thickening, it can be done at this time.

The next procedure is to hoist



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WITH SEA-LAC it's easy to change ***steel to brass***, brown plastics to white, or put a porcelain-like finish on pressed paper. Hundreds of substitute finishes to choose from. Remember, it doesn't cost any more to finish with SEA-LAC. Write today for full information.

DURALAC CHEMICAL CORPORATION
NEWARK, NEW JERSEY

Mosquito Bites Jap

THERE'S NO TIME TO LOSE—THERE'S JUST TIME TO WIN!

- **INSTRUMENT BOXES**
- **AIRPLANES**
- **GUN STOCKS**
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- **TOOL CHESTS**
- **MARINE PARTITIONS**
- **RADIO INDUSTRY, ETC.**
- **SKIIS**

LT. JOHN D. BULKELEY, U. S. N., (now Lt. Commander) skipper extraordinary of P. T. Mosquito boats, and his gallant crew raced into Subic Bay under heavy Jap gunfire, torpedoed and sank a crack Jap cruiser. Later, they evacuated General MacArthur and his staff from Corregidor.

All of us on the production front glory in the heroic deeds of our fighters on the battle fronts. We know that our constant research and continuous stream of production will eventually enable them to overwhelm the enemy.

Our production facilities are devoted to the manufacture of government specification protective coatings. Listed here are just a few of the war products now being coated with our materials.

Phone, wire or write and let one of our finishing experts help you "keep production rolling."

THE LAWRENCE-McFADDEN CO.
Headquarters for Fine Finishes Since 1875
7430 STATE ROAD PHILADELPHIA, PA.

the drum high enough to allow material to drain into a motor-driven shaker, which shakes and filters lacquer through one thickness of silk, as used in silk-screen procedure. The material is then ready for use. The finish is flat, adhesion is excellent and the drying time 4¼ minutes.

At this time I test the adhesion with a rough piece of heavy cardboard, and so far I only polish the surface without scratching through the finish. The majority of finishers will say it is impossible to dry in this short space of time; but if these same people will try my method they will find that they can speed up their production line considerably.

You will note that my material is being used as fast as it is being reclaimed, which is the secret of allowing the 15% moisture to remain in the lacquer. If the lacquer is mixed and allowed to stand any length of time, the moisture will cause a great deal of trouble such as changing the color of the lacquer and affecting its adhesion, and drying time.

I have used 100% reclaimed material over a surface that has not been degreased. The surface had been covered with water-soluble oil for machining, plus the greasy condition in which the raw material is generally received. This steel is then rough wiped with a dry rag to remove heavy grease or excess oil, and then sprayed. I found it necessary, when not degreasing, to add ¾ of 1% of phosphoric acid to the thinner to cut through the grease and etch the steel.

The price of lacquer thinner ranged from 57 cents to 70 cents per gallon. Labor, figured at the rate of 70c an hour, gave me a cost of from 34c to 47c per gallon of reclaimed lacquer at gun viscosity, whereas virgin material would cost about $1.16 per gallon, not including labor.—W. A. BEACHAM.

Additional Comments by Author:

The method of reclaiming lacquer does apply to both clear and pigmented lacquer for all kinds of surfaces.

No sir, I do not use anything on the rags when removing excessive grease. Phosphoric acid (¾ of 1%) is added to the thinner which is to be used to mix with the lacquer. The acid will not mix with the lacquer but will mix with the thinner and when the thinner is added to the lacquer the amount of acid is so small that it has no effect upon the material, but when sprayed onto greasy steel, there is enough acid to etch the steel before solvents evaporate.

In regard to the durability of reclaimed lacquer, I have tried every test I could think of—water, boiling and cold; salt spray, gasoline, outside exposure test on the roof for over 12 months—and so far I find the reclaimed material will withstand more hard treatment for a longer period of time than virgin lacquer.—W. BEACHAM.

Letters from I. F. Readers

(Continued from page 8)

Primer-Surfacer for Plywood

We were very much interested to read, in your July issue, a discussion of marine finishes necessary for gumwood plywood. This application for plywood is of especial interest to us at this time.

Our laboratory has recently formulated a primer-surfacer and an exterior enamel for use over Fiberglas fabric on naval vessels. In investigating other uses, we have found these coatings well suited for use over plywood. They are

Limitation Order Jitters?

NOROY SYNTHETIC FINISH

For manufacturers restricted under limitation order No. L-81 prohibiting use of Nitrocellulose Lacquer.

- Produces a beautiful high-gloss finish on wood.
- Can be sprayed, tumbled or dipped.
- Dries fast, coverage 300 sq. ft. per gallon.
- Leaves a smooth, hard finish, free of pin holes or orange peel.

Order a one gallon trial can of NOROY SYNTHETIC FINISH at drum price for your own production test.

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Wire or Phone for a Despatch representative. He can recommend the right system of finish baking and drying for your plant.

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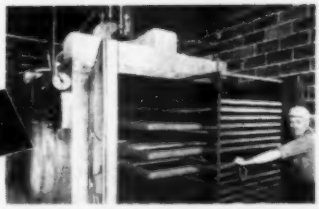
FOR ARMY, NAVY EQUIPMENT



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MINNEAPOLIS · MINNESOTA

fireproof, quick-drying, non-grain-raising and durable.

We believe we have an ideal finish for marine plywood and would appreciate your putting us in touch with those people most interested in its use. —Benjamin Foster Co., Philadelphia, Penna.

Luminous Gummed Paper

The product we have to offer is a luminous-coated gummed paper, of which I am sending you half a dozen samples. This paper regenerates in a minute or so under exposure to natural or artificial light, and it will retain very high luminosity for about two hours, then gradually diminish over a period of 24 hours. Even after 20 hours, it is easily visible in a dark room after one's eyes have become accustomed to the darkness.—McLaurin-Jones Co., Brookfield, Mass.

Silk Screen Stencils

I have read with considerable interest the article by Harry Hiett entitled, "Stencil Screen Printing," in the March 1941 issue of INDUSTRIAL FINISHING. Due to the war situation it is difficult to get Swiss silk or stencil silk. I would appreciate any information you can give me as to how I can remove the stencil from photographic screens. The solution I am using is a combination of powdered gelatine and bichromate solution.—G. N.

We are referring your problem to a silk-screen expert who will answer you direct.—ED.

Tumble Finishing

If you have any information in your files relative to manufacturers of tumbling barrels for wood parts, or the finishing thereof, we would appreciate your forwarding this information direct to . . . . You were referred to us as a possible source for this information by our Newark, N. J. Division of the Pittsburgh Plate Glass Co.—DR. E. H. KESSLER.

Information given.—ED.

Likes Etheridge's Article

In your July issue of INDUSTRIAL FINISHING, there is an article by H. J. Etheridge which is of great interest to us. After reading this article we have taken excerpts and made it into a mimeographed form which we wish to pass amongst our entire inspection force. Before doing so, we would like to have your permission.

We are enclosing one of the copies for your approval and you will note that the only omission we have made is that which pertains to doping of aircraft material.

It is our belief that this is one of the best articles on inspection attitude that we have had the pleasure of reading.—R. H. ARMSTRONG, Chief Inspector, W. L. Maxson Corp.

Permission granted.—ED.

White Finish for Wood

Will you please give us the names of several manufacturers who make a spray white finish, such as is used on hardwood painted furniture, to air-dry hard overnight with a gloss or semi-gloss finish? We want to apply this on sanded poplar or basswood so as to obtain a smooth finish without sanding or rubbing, with only one coat.—S. C. Co. (Porch Shades).

Viscosity Cups

We are interested in information and prices covering Ford and Dupont viscosity cups, as used in checking viscosity on paints, varnishes, lacquers and other finishes.—K. M. Co.

Information given.—ED.

Speed Glaze Wanted

Please advise where we can obtain the Speed Glaze, as mentioned in article by Henry Novak, on page 21 of your May 1942 issue.—S. C. Co.

We are referring your inquiry to the author of the article, as he didn't mention the name of the manufacturer of this material when he wrote us.—ED.

SOS Filler Found

On page 7, in May 1942 issue, we notice that the F. Mfg. Co. made inquiry regarding SOS Wood Filler, to be used in the process of wood finishing. For your information, we are the manufacturers of SOS, which is made for wood filling as well as metal finishing. We will appreciate it if you will give our name to the F. Mfg. Co. —Flood & Conklin Mfg. Co.

Information given.—ED.

I. C. D. FORMULA NINE

NON-INFLAMMABLE
« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER-CLEANING

PROMPT DELIVERIES

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

SPECIALTY COATINGS—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

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American industry's remarkable progress and development is due primarily to the many millions of dollars poured into laboratory research. Our NEW PERIOD PRODUCTION FINISHES are the result of over twenty-five years of constant laboratory work and research.

We find ourselves well prepared in our new and enlarged plant and laboratory to produce and deliver all kinds of protective coatings and finishes for materiel and for civilian industrial products. Listed here are some of the materials we manufacture.

Working samples and complete information will be sent on request.

NEW PERIOD PRODUCTION FINISHES

NEW YORK WOODFINISHERS SUPPLY CO., INC.

109 IMLAY STREET BROOKLYN, N. Y.

Established 1917

Paasche Equipment Bulletin

A new and attractive bulletin that illustrates and describes Paasche Airbrush equipment, manual and automatic operated, is now ready for distribution. It is interesting and informative reference work for all who have anything to do with airbrush equipment. Send for copy to Paasche Airbrush Co., 1923 Diversey Parkway, Chicago, Ill.

Protective Coatings Bulletin

Protective Coatings, Inc., 10391 Northlawn, Detroit, Mich., has printed for distribution several bulletins on different materials in its line of protective coatings. These bulletins are bound between yellow covers printed in blue. The line of materials include high heat, insulation, rust-inhibitive and acid-alkali-resistant coatings.

Wrinkle Finish

A bulletin printed in three colors shows illustrations of eight different patterns of wrinkle finish, along with illustrations of a variety of products finished in this type of coating. The bulletin is published for distribution by Lasting Products Co., 200 S. Franklintown Rd., Baltimore, Md.

Drum Handling and Cleaning

A large bulletin containing illustrations and brief notes on a variety of equipment for handling, hoisting, inspecting, cleaning and painting paint and oil drums has been published by The Vol-U-Meter Co., Buffalo, N. Y.

Many items generally unknown to a majority of drum users are shown, therefore concerns and industries who have anything to do with drums should get a copy of this illustrated bulletin, which is free.

New Spray Book Free

In a profusely illustrated 15-page booklet, "How to Speed Up Your Finishing Operations," the technical staff of the Finishes Division, E.I.duPont de Nemours & Co., explains the 11 factors that must be properly controlled in order to attain the utmost efficiency in spray painting.

Because today manufacturers are confronted with new finishing problems as a result of conversion, and many semi-experienced spray-gun operators work on the production lines, the pocket-size booklet is expressly devised as an educational piece to help speed output, avoid rejects and wasted finishing materials.

The 11 points for efficiency and conservation described in text and illustrated by photographs and diagrams are: Temperature of Paint; Air and Fluid Pressures; Viscosity of Paint; Adjustment of Spray Gun; Handling of Spray Gun; Triggering of the Gun; System in the Strokes; Uniformity of Coating; Thickness of Film; Causes of Rejects; Touch-Up Procedure.

Production engineers, finishing foremen and others interested in speeding spray-gun operations may obtain copies by writing to the Du Pont Finishes Division, Wilmington, Del.

New Books

CATALOGS
CIRCULARS
NEWS RELEASES

General Industrial Finishes Brochure

The General Industrial Finishes Division of General Printing Ink Corp., 100 Sixth Ave., New York, N. Y., has published an elaborate and informative brochure which contains 16 pages 9x12-in. The book is well illustrated and is presented in three colors in addition to black on white.

Quoting from the foreword:

"Industrial finishes and protective coatings are today assuming ever-increasing importance, not only in industry and commerce, but in war. The purpose of this booklet is to acquaint you with the range of facilities General has available for the development and production of these materials, as well as to indicate briefly the type of organization behind the product."

The brochure is free. Send for a copy.

Monsanto Chemicals Book

A valuable 170-page book of chemicals, the 26th edition, has been compiled and published by Monsanto Chemical Co., St. Louis, Mo. It is made up of high-grade paper sheets 6x9-in., bound between heavy paper covers with modern plastic binding.

Considerable effort has been expend-

ed to make this book one of the most useful and informative chemical trade catalogs published. It contains chemical names, trade names, formulas, standard forms or grades, uses, general information and available special literature on all of the several hundred chemicals and plastics manufactured by Monsanto. A general technical section includes tables of physical constants for some of the more common chemicals. All of this has required a threefold increase in both number and size of pages over the last edition.

So much expense has been involved in getting out these books that the company is only filling requests that come in on business letterheads addressed directly to the company.

Floor Cleaning Book Free

The Magnus Chemical Co., Garwood, N. J., manufacturers of industrial cleaning materials, emulsifying agents and metal-working lubricants, has just issued a new 24-page Technical Bulletin entitled "The Cleaning of Industrial Floors."

This bulletin, No. 62, has been written not only from the viewpoint of cleaning floors for personal safety by the elimination of greasy, slippery floors, but from that of cleaning floors for longer floor life. It provides the one in charge of floor maintenance with a guide to the selection of the proper type of cleaning material best suited to his floors.

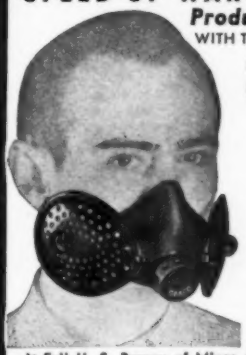
The bulletin (8½x11-in. page size) covers the cleaning of practically every type of flooring material used in all types of buildings, from industrial plants to hotels, public buildings and institutions.

Your copy of this new Bulletin, No. 62, can be obtained by writing to the Magnus Chemical Co., Inc., Garwood, N. J. Mention of this magazine would be appreciated.

Saved Over 90% of Material

During a recent test made by the Ronci Machine Co., manufacturers of the Speedip Whirl Enameler, Providence, R. I., on 10,000,000 buckles, approximately ⅝x1-in. in size, the saving in material proved to be substantial. It was carefully calculated that by using the former method of coating, 850 gallons of material would be required to coat 10,000,000 buckles. After finishing this number of buckles with two coats in the speedip enameler, the total consumption of material for the job amounted to 50 gallons. This showed a net saving of approximately 800 gallons or well over 90% in material. The test also showed that one operator was able to coat 100,000 buckles in five hours.

SPEED UP WARTIME Production!
WITH THIS NEW
Cesco No. 94 RESPIRATOR



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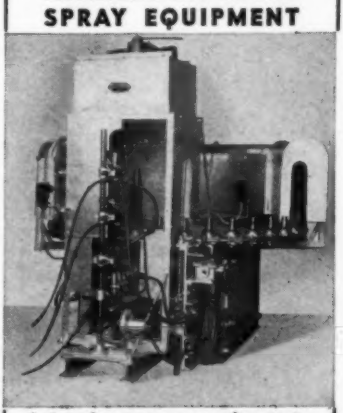

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392 Park Ave. Newark, N. J.

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metalworking, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

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Editorial

Gather and Deliver Salvaged Scrap Materials for War

Formation of the American Industries Salvage Committee, representing groups of leading industrial concerns who are working with the Conservation Division of the War Production Board to help speed the collection of vital scrap materials, has been announced by Robert W. Wolcott, Chairman of the group and President of Lukens Steel Co.

The work of the committee, backing up a broad advertising program, will be two-fold: 1) to reach every manufacturing and business firm in the nation to impress upon them the absolute necessity of getting their scrap on the way to the production line; and 2) to get business men cooperating with the local salvage committees of WPB already set up in 12,000 communities.

The activities of the committee will be closely coordinated with the present intensified scrap collection drive of the WPB. The committee focuses the spotlight of public attention upon the need for iron and steel scrap, non-ferrous metals, rags, burlap, rubber, tin cans (in some localities) and waste cooking fats.

Leaders in 50 industries are being asked to serve as chairmen for their respective trades in a broad effort to see that every company appoints a salvage manager with authority not only to clean out production scrap, but also to junk obsolete equipment and similar material. The great task faced by American industry in meeting the expending war-production program makes it necessary for each company to intensify its scrap-collection efforts.

"Production of war equipment," Mr. Wolcott said, "is limited by the amount of raw materials which are available. Scrap is an important part of raw-material supply. Industry must therefore do its utmost to increase its collection of scrap. We believe the efforts of the WPB in organizing and carrying out scrap collections have thus far produced excellent results. But the increasing demands of war call for still more scrap materials. The

intensified campaign of the WPB deserves the whole-hearted support of every industrial company. We hope to release, for war use, unusual sources of scrap which may have been largely untapped, such as obsolescent machinery, unused dies and jigs, and other types of idle plant equipment."

Changing from Regular to Substitute Finishes

"When you must, you can", is about the sum and substance of changing over partially or wholly from old-time regular finishes to what you can get under war conditions. Some users have made their changes a little at a time for various reasons best known to themselves.

Among those concerns that have made a complete change-over all at once, we have in mind a large furniture factory wherein furniture is spray-finished and force-dried on the conveyor line. This company, in cooperation with a large firm that can supply all materials, started its test with substitute sealer, shading stain and varnish. As a result of the first test some changes were made in the formulation of materials.

Another test was made with the re-formulated materials. Changes and variations were tried in the speed of the conveyor at certain points. Changes were made in various other factors that could be changed, such as spray pressure, drying time, drying heat, time for cooling after drying, etc. In some places the drying time had to be accelerated; at other points a different grade or type of thinner was substituted to make things work out satisfactorily.

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The Most Complete Handbook On Finishing Fine Woods Ever Written

Tells EVERYTHING you need to know about Wood Finishing. Includes types of unfinished furniture, choice of finishes, brushes, accessories, precautions, natural finishes, staining, filling and bleaching, varnish, enamel or paint finishes, finishing with a spray gun and many other fascinating practical subjects. Also includes complete section on furniture repairing and refinishing. Four pages of 32 different foreign and domestic woods illustrated in natural colors. 112 pages fully illustrated.

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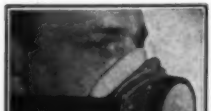

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- LIGHTER WEIGHT
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M3C CHEMICAL RESPIRATOR

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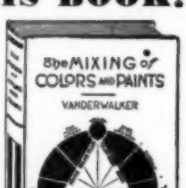

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By persistently staying with the test, engineers and chemists finished off the problem to the entire satisfaction of everyone concerned. A lot of things went wrong during the test but qualified experts were on the job to correct them. Interruptions in production occurred and quality was tampered with for awhile, but after this major operation both the user and the supplier of materials had learned several valuable lessons about finishing wood furniture on the conveyor line with all war-time materials—and both organizations were then ready to profit individually by their experience.

The user felt assured that so long as he obtained the exact materials finally adopted and followed the same finishing schedule, he could depend upon satisfactory results. The supplier, in turn, had learned valuable lessons about his materials and the production finishing schedules in which they would work to best advantage.

Better Foremanship Needed Today

As a foreman do you strive to be everything the name implies? Webster's definition of a foreman is "an overseer or director of men or women in his department," but I am sure this definition falls short of describing and defining the successful foreman of today.

A good foreman is a great asset and therefore a very valuable man in any type of industry. On the other hand, a poor foreman is a liability and usually is worse than no foreman at all.

To be successful a foreman must be able to cooperate effectively with others. He must think of team work. He must be able to plan and

think clearly in any emergency. He must be able to direct and instruct not only his experienced men but also new and inexperienced men who are being employed in larger numbers today.

One of the first requirements of a successful foreman is team work and cooperation with the other foremen and his supervisors in the organization. Lack of cooperation between foremen has caused many factories to close. Team work makes a foreman better and makes his job more interesting.

A good foreman must be able to plan his work ahead so as to get the maximum amount of work done and at the same time maintain quality and good workmanship. He must be able to direct the men in his department in a way that will hold their goodwill and confidence, so that when anything goes wrong or any problem arises his men will come to him first with their problems.

A good foreman must be able to instruct and train new men, for with the shortage of labor that is now facing us, foremen must train more and more men every day. In training these men a foreman should be careful who he trains, and try, as far as possible, to ascertain if the person to be trained is the proper individual for the type of job designated. Select men, if possible, who are interested and can adapt themselves to that particular job.

To be successful as a foreman you must be able to eliminate, as far as possible, all unnecessary waste in your department, as this gives your department a "black eye" so far as production and material costs are concerned. It also costs your company plenty of money.

While I have named just a few of the many duties of a successful foreman, we all can learn—and we should strive each day to improve upon our methods and try to be more valuable men to the company that employs us. By doing so, our work will be more interesting and our job will be easier. No foreman is better than the organization he builds around him, and hence the type of work he turns out.—H. W. CHESTER.

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Demands for more skilled workmen in war and allied industries and also for more resourceful foremen, superintendents and managers in production and planning departments has prompted many concerns to organize and conduct classes of instruction. These classes are useful in many ways. They are a means of discovering men of exceptionally promising talents—men who would be remarkably skillful and profitable to the company at some work other than what they are now doing, or men who could readily assume the responsibilities of higher executive positions.

Another important accomplishment of these industrial classes is the fact that everyone in attendance, including the instructor, secures a more clear and uptodate understanding of the entire manufacturing process and the characteristics of all materials and supplies used. Everyone obtains a knowledge of the uses to which every part of the product will be put. He therefore attaches a new importance to the quality of the materials used, the exacting accuracy demanded in certain types of work and the strict supervision imposed upon all employes.

With this intimate knowledge of all that is included in the manufacturing process, men are in better position to make suggestions for improvements and to see opportunities for effecting important savings. They take more interest in their work and its relation to other men's work along the production line. And the man who can teach someone else his job is in position to step ahead to something better.

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War Bond Honor Flag

The Foxboro Co., Foxboro, Mass., makers of measuring and controlling instruments for industrial processes, was awarded the Minute Man flag of the Treasury Department, on July 8, in recognition of payroll allotment subscriptions by over 95% of its employes. The coveted flag and accompanying certificate were presented by Alfred C. Sheehy, Deputy State Administrator of the War Savings Staff for Massachusetts. The presentation followed a noon-hour concert by The Foxboro Co. Brass Band.

Ferro Enamel Erects Honor Roll

The Ferro Enamel Corp., Cleveland, Ohio, believes that porcelain enamel is the ideal material for honor rolls, and has just erected one of this type. The Ferro Honor Roll is finished in Ferro porcelain enamel on steel and is erected out-of-doors in front of the company's main offices. Company officials say it will not rust, wear or fade and that it can be cleaned merely with a cloth and water. The roll is finished in red, white, blue, maroon, gray and black and is 8x5-ft. in size.

Ditto Departures from Stereotyped Standards

(Continued from page 26)

utilizing plastic paint coverings are still in process. Polished aluminum parts and chrome-plated die castings have bowed to painted cast-iron and steel; and excellent appearances, with no "let down" on final inspection standards, are still the rule.

In my humble opinion, developers of finishes have done a swell job for Uncle Sam by helping manufacturers on "equivalent changes" so that vital materials go where they are needed most.

Concluding, in the lighter vein, I can vouch for the truth (?) of the story of a Scotch engineer who was sitting in the kirk thinking so deeply that he inadvertently spoke his thoughts aloud, saying, "How in hell are we to find equivalents for plating?" The minister, with a frown of disapproval, bowed his head and gave him his answer, saying, "Brethren, let us-s-pray."

Error In Address

Attention is directed to error in address of the New York Woodfinishers' Supply Co., Inc., which appeared in this company's advertisement in July issue of Industrial Finishing magazine, page 74. The correct address is 109 Imlay Street, Brooklyn, N. Y., as carried in this issue.

Jones-Dabney Changes Detroit Sales Representative

The Jones-Dabney Co., manufacturers of enamels, lacquers, synthetic resins, etc., announces the resignation of Mr. S. C. Robbins who has been in charge of their Detroit Sales Office for a number of years.

Messrs. Rol P. Weyand and D. W. Sullivan, who have both been with the Jones-Dabney Co. for many years in a sales capacity, will be in charge of the Company's Detroit Sales Office.

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Blackout Painting

BLACK, dark brown and dark olive drab paints, applied on the outside surface of window glass, are recommended for efficient blackouts, it is reported in a study released by the Finishes Division of the Du Pont Co.

"While application of blackout paint to the interior of glass is easier," said the report, "the serious disadvantage of this method lies in the creation of a mirror-like effect. Moonlight and flares are more sharply reflected than by uncoated glass. An inside painting job on windows, skylights and doors, therefore, can only be considered as a partial blackout.

"Positive and durable results may be obtained, however, by using blackout paint on the out-of-doors side of window glass."

Among five blackout methods put under test, the use of curtains and shields was found to be the most practical as well as the costliest. Shields, curtains or shutters that can be placed or removed as the occasion demands (preferably on the outside) were especially recommended for plans running 24 hours a day. This method not only affords protection from the weather in case of shattered glass but, more important, permits full use of daylight by the workmen when these shutters or curtains are not in place.

This new lamp and table combination is of walnut while the cocktail table is birch in a suntan finish. Photograph, courtesy of the American Furniture Mart.

In other instances light can be shut off and all reflected glare eliminated, according to the report, by painting the exterior of panes with black, dark brown or dark olive drab finishes of a spar varnish type. These paints are and should be flat, not glossy. Flat paint offers lower visibility than one with a shine which will reflect any outside light. To date, experiments with orange lights and blue painted windows have not proved successful. While reasonably efficient for blackout purposes, the light for working conditions is not adequate. The report warns, however, that due to the tendency of dark paint to absorb heat, plate glass "must never be painted with dark colors because the glass may crack under temperature changes."

It was said that window glass should need but one coat of the specially formulated paints being produced by reputable companies to meet Office of Civilian Defense requirements. To counteract the depressing effect that darkened windows have upon room occupants, the report suggested that a white undercoat be applied to the outside of the glass before the blackout paint. Laboratory work is being continued by Du Pont on blackout finishes with emphasis upon camouflage paint applications.

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Series F and G Bonds are intended primarily for larger investors and may be registered in the names of fiduciaries, corporations, labor unions, and other groups, as well as individuals.

The Series F Bond is a 12-year appreciation Bond, issued on a discount basis at 74 percent of maturity value. If held to maturity, 12 years from the date of issue, the Bond draws interest equivalent to 2.53 percent a year, computed on the purchase price, compounded semiannually. The Series G Bond is a 12-year current income Bond issued at par, and draws interest of 2.5 percent a year, paid semiannually by Treasury check.

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706 East 19th Street Kansas City, Mo.

"The picture on page 81 of your July issue appealed to the writer as a very good way to exterminate the three bugs if they could be collected under one arc light, as the picture seems to illustrate so well. (As Ty Tyson would say, 'Give the bugs Bug-A-Boo.') One of your enlarged reproductions would certainly be a welcome poster for our paint department bulletin board."
—Phoenix Wire Works, Inc.

"Take immediate recognition of the public's interest in the future. . . . Put patriotism into your ad copy by all means and put in something about your present all-out war effort which makes it impossible for you to give them the civilian things they now want and cannot have. But, above all, paint a picture of what they can enjoy in a better and fuller life, along with jobs, if they will save now the wherewithal with which to buy and thus preserve their jobs after the war. In short, sell them on the theme: Buy Tomorrow Today—and so do your bit toward winning both the war and the peace."—C. C. Carr, advertising manager, Aluminum Co. of America.

"Referring to your copyrighted cartoon in July issue of INDUSTRIAL FINISHING entitled 'The Finishing Industry will FINISH the Axis,' we would be greatly pleased to receive as many copies as you might allow us. Thanks for making available a swell cartoon with a real punch."—Wm. S. Hawgood, The Patterson-Sargent Co.

A new folding wood chair which, by replacing the old standard steel folding chair, saves about 14½-lbs. of steel per chair and considerable cargo space in shipping, is now in use at various camps, posts and Army centers throughout the country, the War Department announced. The Quartermaster Corps is procuring 1,500,000 of these compact little chairs—a potential saving of around 21,750,000-lbs. of steel which would have been necessary for the production of the old type steel folding chair.

"A cartoon appeared in your recent issue of INDUSTRIAL FINISHING entitled, 'The Finishing Industry will FINISH the Axis!' We would appreciate your sending a larger size reproduction of this cartoon, as indicated in the notation appearing under the picture. We feel that the picture carries a lot of meaning and we would greatly ap-

preciate your consideration to this request." —V. H. Meatheringham, Pittsburgh Plate Glass Co., Milwaukee.

According to Brig. Gen. Joseph E. Barzynski, commanding general of the Chicago Quartermaster Depot, 1819 W. Pershing Road, 15 furniture manufacturers have received orders for approximately half a million hardwood bedsteads, totaling well over two and a half million dollars.

"Will you kindly send a reproduction of the cartoon which appears in the July issue of INDUSTRIAL FINISHING magazine? I certainly enjoy your magazine."—C. B. Gracely, The DeVilbiss Co., Minneapolis.

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